UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PINEDALE FIELD OFFICE
Environmental Assessment WY-100-EA11-145
For Stewart Point 6D3-28 and 10B4-28 Wells
Lease WYW08592

TABLE OF CONTENTS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pinedale Field Office
Environmental Assessment (EA)

EA Number: WY-100-EA11-145
Applicant: QEP Energy, Inc.
Well Pad: Stewart Point (SP) 7-28 well pad
Wells: SP 6D3-28 (master well) and 10B4-28 (formerly 9B3-28)
Lease No: WYW08592

1.0 INTRODUCTION

QEP Energy, Inc. (QEP) has submitted Applications for Permit to Drill (APDs) for two natural gas delineation wells, the Stewart Point (SP) 6D3-28 and the 10B4-28 on June 2, 2008 and June 29, 2007 respectively; herein referred to as the 'proposed action'. They would be drilled from the proposed SP 7-28 well pad in the SWNE, Sec. 28, T. 33 N., R. 109 W., and located in Development Area 1 (DA-1) of the Core Development Area (CDA) of the Pinedale Anticline as defined in the *Record of Decision for the Pinedale Anticline Oil and Gas Exploration and Development Project (PAPA ROD)*, September 12, 2008, Sec. 2.8.1.1, p. 7. The wells would be drilled into and produce from federal lease WYW08592.

The PAPA ROD states that: "delineation drilling in DA-1 will be conducted during the first two years following the signing of the ROD, while adhering to seasonal restrictions for wildlife habitats (Sec. 2.8.1.2, p. 9). Because of cultural and visual-resource concerns regarding the proposed action, the APDs for the SP 6D3-28 and the 10B4-28 wells were not processed within the two-year time frame. In accordance with the PAPA ROD, the BLM Pinedale Field Office (PFO) granted an extension to QEP on July 1, 2010, which allows QEP to drill delineation wells from the SP 7-28 well pad after September 12, 2010, with respect to applicable stipulations, regardless of when the APDs were completed (Appendix II of this EA).

The proposed action would include a 5.3-acre well pad and 1,904-foot long by 50-foot wide access road (2.2 acres), which would result in approximately 7.5 acres of new surface disturbance including cut and fill slopes and the topsoil pile (Map 1.0-1).

1.0.1 Background: The proposed SP 7-28 well pad was one of six delineation well pads (including the SP 11-28, 11-21, 3-28, 14-20, and 1-29 pads), which were proposed as early as 2001 (Map 1.0-1). With the exception of the proposed action and the SP 11-28 pad, all the above well pads have been constructed and the delineation wells have been drilled.

1.0.1.1 Delineation Wells: The PAPA ROD defines 'delineation' as the determination of the productive extents of the field (Sec. 2.8, p. 7). QEP drills delineation wells to:

- Determine the economic limit of the field in the vicinity of the delineation wells.
- Determine future drilling densities and reservoir characteristics.

- Estimate ultimate recoveries (EUR).
- Minimize the risk of future development drilling.
- Schedule production drilling and develop reserves out to the economic limits.

The rock strata of the PAPA dip to the east and west from the crest of the anticline. The better gas producing wells tend to be nearer the crest, while wells located down-dip of the crest generally produce less gas. Delineation wells are drilled in pairs in areas of data gaps; one down-dip, to determine the projected economic limit (decreasing gas), and the other up-dip, closer to the crest, to determine the economic risk (increasing gas). If the wells are located too close to other delineation wells, new data have limited value. If they are located too far from other delineation wells, data gaps still exist. The proposed bottom-hole targets of the proposed delineation wells would be located in the data gap between the bottom-hole locations of the existing delineation wells drilled from the SP 3-28 and SP 4-33 well pads (Map 1.0-1).

1.0.1.2 Brief History-2001-2011: A preliminary reconnaissance was conducted by BLM and QEP on September 1, 2001, to determine the best possible placement of the proposed SP 7-28 delineation well and other delineation wells. BLM recommended that QEP move the proposed SP 7-28 pad because of numerous perceived resource conflicts.

QEP submitted a Notice of Staking (NOS) for the SP 7-28 well (NWSE, Sec. 28, T. 33 N., R. 109 W.), on October 9, 2001, as revised during the reconnaissance on September 1, 2001. On October 19, 2001, they submitted an NOS for the SP 11-28 delineation well (NWSE, Sec. 28, T. 33 N., T. 109 W., Map 1.0-1). At that time, directional drilling was not commonly utilized and vertical delineation wells were drilled from individual pads.

An onsite was conducted on July 23, 2002, for the SP 11-28 well. Several resource conflicts were identified during the onsite, including the presence of an archaeological site, and the location of the well pad and access road in a sensitive viewshed at the convergence of two drainages in steep terrain, which would result in 15- to 20-foot cuts and fills.

On July 14, 2003, QEP withdrew the NOS for the SP 7-28 well. It was not until July 2006 that NOSs or APDs were re-filed for this proposal.

On July 24, 2003, the NOS for the SP 11-28 well expired. An NOS for the SP 11-28D well was submitted for the same location (Map 1.0-1). A second onsite was conducted on November 26, 2003, at which, BLM recommended that QEP move the proposed site out of direct view of the town of Pinedale and submit a Visual Resource Protection Plan (VRPP) for the site.

A public tour was conducted for proposed Stewart Point drilling projects located in the sensitive viewshed on May 11, 2005. One project was to expand the existing SP 3-28 well pad for the SP 2A-28D well. Two public comments were received and are included in Appendix II.

BLM and QEP hosted a second public tour of Stewart Point wells including the SP 11-28 well, on September 28, 2005. One public comment was received and is included in Appendix II.

NOSs were submitted for the SP 6D3-28 and the SP 9B3-28 wells on the revised SP 7-28 well pad proposal on July 21, 2006, and a third public tour was conducted on August 16, 2006. Participants included BLM, QEP, Wyoming Game and Fish Department (WGFD), the governor's office and eight members of the public. A Memorandum of Understanding (MOU) between the state of Wyoming and the BLM was signed on August 31, 2006, to establish the state of Wyoming as an official cooperating agency on the proposed action (Appendix II). Twenty six public comments were received (Appendix II).

The first of seven government-to-government consultations with Native American tribes was conducted on September 1, 2006, with the Eastern Shoshone Tribe. Additional consultations were conducted with the Eastern Shoshone Tribe on August 27, 2007, June 22, 2011 and May 21, 2010; with the Northern Arapaho Tribe on May 22, 2007, and with the Uinta-Ouray Ute Tribe on May 4, 2010 and August 4, 2010. Additional consultation letters were sent to the Eastern Shoshone, Northern Arapaho, and Uinta-Ouray tribes on April 27, 2011. The letters provided a summary of the project to date and included the BLM's report regarding cultural resource site 48SU2019 in the vicinity of the proposed SP 7-28 well pad. The letters asked for any additional information that should be considered regarding the project or the cultural site. The BLM made follow-up phone calls to those same three tribes between May 23 and May 31, 2011 to confirm that they had received the letters and to inquire if they had additional information or comments on the project or the cultural site. Specific details about the nature and location of archaeological and cultural resources are not presented in this EA and are not available for public disclosure in accordance with 43.CFR 7.18.

APDs were received on September 5, 2006 (resubmitted with changes on June 2, 2008) and June 29, 2007, for the SP 6D3-28 and SP 10B4-28 wells (formerly 9B3-28), respectively.

On January 9, 2007, a BLM scoping meeting was held to identify issues and possible mitigation measures for the proposed SP 7-28 well pad. It was determined that the SP 7-28 well pad would be located within crucial winter range for mule deer and pronghorn, adjacent to a live spring and range improvement, visible from Highway (Hwy) 191, and too close to an area considered important by Native Americans. It was agreed that the SP 11-28 well pad should not be built, the SP 7-28 well pad should be limited to one delineation well and moved westward to resolve tribal concerns, and that natural screening techniques should be utilized to hide production facilities if the pad was built.

An onsite was conducted at the revised location of the SP 7-28 well pad for the SP 6D3-28 and SP 9B3-28 delineation wells on August 23, 2007. As a result, QEP agreed to 1) move the proposed pad to the northwest, 2) determine whether the production facilities could be placed on the existing SP 3-38 pad to minimize visual effects, and 3) submit a VRPP.

An onsite was conducted on September 11, 2007 with QEP staff, the BLM field manager and a BLM Wyoming State Office representative. BLM asked QEP to: 1) move the proposed pad northwest into the hill to allow future expansions of the pad to be staggered to the north and east but still protect the ridge line, 2) place production facilities in the northernmost corner of the pad

to minimize visual effects, 3) shorten or move the proposed access road, and 4) use sagebrush transplants in the interim reclamation to hasten re-growth.

An onsite with QEP, BLM staff, and JFC consultants was conducted on October 1, 2007, to locate key observation points (KOPs) for the VRPP.

1.1 Purpose and Need for the Proposed Action

The purpose of the proposed action is to provide QEP the opportunity to more effectively define the recoverable boundaries of its gas lease on federal mineral estate in the project area. The need for the proposed action is established by the BLM's responsibility under the Mineral Leasing Act of 1920 and Federal Land Policy Management Act (FLPMA) to respond to the APDs filed by QEP for permits to drill two delineation wells on their valid oil and gas lease (WYW08592).

1.2 Decision to be Made

BLM's decision is whether or not to approve the submitted APDs and if so, with what conditions of approval (COAs) or other restrictions.

1.3 Public Scoping, Public Involvement, and Issues

The NOSs and APDs for the wells were available for public review at the front desk of the BLM PFO for a minimum of 20 business days from the day of receipt at the PFO. Three public tours have been conducted for the proposed action, extensive public scoping was conducted as part of the PAPA FSEIS process, and two additional episodes of public scoping took place for the proposed action.

1.3.1 Public Tours: A public tour was conducted at proposed Stewart Point drilling projects in the sensitive viewshed on May 11, 2005. Included was the proposed expansion to the existing SP 3-28 well pad for the SP 2A-28D well, located 1,800 feet north of the proposed action and discussed in the alternatives to the proposed action. BLM and QEP hosted a public tour of the proposed Stewart Point gas wells on September 28, 2005, which included the SP 11-28, 7-28, 3-28, 14-20 and 11-21 well pads. A third public tour was conducted on August 16, 2006. Participants included BLM, QEP, WGFD, the governor's office and eight members of the public.

1.3.2 Formal Scoping: Public Scoping as part of the PAPA ROD process took place from October 21, 2005 through November 20, 2005. The various draft SEIS documents were available for public review and comment in December 2006 and December 2007. BLM hosted two open houses on the Revised Draft SEIS in January and February 2008. Refer to the PAPA ROD (Sec.5.1 Scoping, p. 32) and the PAPA FSEIS (Ch. 2, Sec. 2.1 Public Participation, p. 2-1) for a detailed discussion on scoping, agency participation, and public participation.

Additional public scoping on the proposed action was conducted from February 10, 2011 through March 11, 2011 to inform the public of additional information concerning mule deer that was not available during the scoping periods of the PAPA FSEIS process. Since the signing of the PAPA ROD on September 12, 2008, the BLM received additional information from a Western Ecosystems Technology, Inc. report, confirming that the proposed action is located

within an identified mule deer migration corridor. Comments were received from eight members of the public including QEP.

1.3.3 Issues: As a result of all the scoping, public tours, onsite visits, and staff analysis of the proposal, the following issues were raised with this proposed action:

- How will crucial mule deer winter range and important migration routes be affected by the proposed action and alternatives?
- How will the proposed action and alternatives impact Greater sage-grouse nesting habitat?
- How will cultural and sacred values of archaeological sites be affected?
- How will the character of the viewshed from the KOPs and in the sensitive viewshed area be modified by pad construction and well drilling, including through soil erosion and visible cut and fill slopes?
- How will the proposed action and alternatives affect air quality, including ozone levels?
- How will residents in Pinedale and near the project area be impacted by industrial activities, such as traffic, dust, lights and noise?
- How will the proposed action and alternatives impact surface and groundwater quality?

1.4 Relationship to Statutes, Regulations, Plans or Other Environmental Analyses

The proposed APDs are in conformance with and tiered to the following field-wide/regional Environmental Impact Statement (EISs):

*Pinedale Resource Management Plan/Final Record of Decision (**Pinedale RMP**), approved on November 26, 2008, and the*

*Record of Decision, Pinedale Anticline Oil and Gas Exploration and Development Project (**PAPA_ROD**), approved on September12, 2008.*

The Pinedale RMP has been reviewed and the proposed action, as mitigated, conforms to the land-use plan's terms and conditions as required by 43 Code of Federal Regulations (CFR) 1610.5. In particular, pertinent decisions from the Pinedale RMP include:

- The PAPA is identified as an 'Intensively Developed' gas field (Map 2-9).
- Minerals Management Goal: Provide opportunities for mineral extraction and energy exploration and development to provide resources to meet national and local needs while avoiding or otherwise mitigating significant impacts on other resource objectives (p. 2-19).
- Minerals Management, Objective I (Intensively Developed Fields): Make federal lands and minerals within existing oil and gas fields (175,040 acres) available for intensive oil and gas leasing, exploration, development, and production (p. 2-21, Map 2-9).
- Wildlife Management Goal: Maintain functioning big game habitats and migration corridors that allow free movement and use of habitats (p. 2-45).
- Visual Management, Objective I: Manage the public lands in a manner that protects the quality of the scenic values of those lands (p. 2-40).

2.0 ALTERNATIVES CONSIDERED

Six Alternatives, including the proposed action, were analyzed in this EA, four were analyzed in detail and two were dropped from consideration.

2.1 Alternatives Analyzed in Detail

The following alternatives were analyzed in detail: 1) the proposed action, 2) a no-action alternative, 3) an alternative that would include drilling the proposed delineation wells from the existing SP 3-28 well pad, and 4) drilling the delineation wells from the proposed SP 7-28 well pad and locating the production facilities on the existing SP 3-28 well pad.

2.1.1 Alternative I - Proposed Action: The proposed action includes drilling two natural gas delineation wells on the proposed SP 7-28 well pad as shown on Map 2.1-1. It is estimated that pad construction would take approximately 80 days to complete. Interim reclamation would occur immediately after well completion.

If delineation wells are productive, it is anticipated that the proposed well pad would be expanded in the future to accommodate multiple production wells.

2.1.1.1 Physical Description: The proposed action would include a new 5.3-acre well pad located at the base of an east-west trending ridge; and a 1,904-foot long by 50-foot wide access road right-of-way (ROW) that would leave the existing SP 3-28 well pad and proceed in a southeasterly direction following existing topography, to the proposed SP 7-28 well pad. The access road would result in approximately 2.2 acres of new surface disturbance. The average slope across the proposed well pad and access road would be about 8 percent. The slope of the access road would be less than one percent. The slope of the ridge directly to the west of the proposed action increases to more than 25 percent in less than 600 feet.

QEP has submitted applications for the pipeline ROWs (WYW-172212, WYW-172213, and WYW-172214) plus a temporary use construction permit (WYW-172236). QEP has proposed placing the three pipelines, designed for future full development of the well pad, in the access roadbed to minimize surface disturbance and visual impacts (Revised VRPP, May 23, 2011, p. 11 and 14 and additional information submitted on June 14, 2011). The pipeline ROW would be 2,461.4 feet long and 50 feet wide, with approximately 558 feet on existing disturbance of the existing SP 3-28 well pad. No additional new surface disturbance would occur beyond that of the proposed access road. Placing the pipelines in the roadbed is not standard practice. They would be installed deeper than normal to avoid ground frost and to accommodate the weight of vehicular traffic. Sizing the pipelines to accommodate any future well drilling from this well pad would eliminate future pipeline installations.

2.1.1.2 Well Drilling and Completion: QEP uses a closed-loop system during drilling. Oil-based mud would be mixed in a closed circulating system and stored in 400-barrel tanks on the proposed SP 7-28 well pad during drilling. No reserve pits would be used. Cuttings would be mechanically separated from the drilling fluid in a centrifuge and placed in cuttings pits. Fracture stimulation fluids would be flowed back to temporary storage tanks on location. Water collected during flowback would be hauled by truck to a Wyoming Department of

Environmental Quality (WDEQ)-approved disposal site. Any condensate captured during flowback would be transferred directly into QEP's liquids gathering system (LGS). No condensate would be discharged into the cuttings pit. Once all waste has been placed in the pit, a Wyoming Oil and Gas Conservation Commission (WOGCC)-certified oilfield waste-management consultant would perform cement-based solidification-stabilization in-situ. Produced water from drilling operations would be gathered and transported via QEP's authorized LGS. Water for drilling would be obtained from the SP 14-20 water well, State of Wyoming groundwater permit SEO U.W. 190125 and transported via temporary surface lines. No new water supply wells would be drilled.

QEP has a field-wide Storm Water Pollution Prevention Plan (SWPPP) on file with the WDEQ and a large-construction general permit. The permit number is WYR101187 and was effective from September 6, 2001 through March 15. 2011. WDEQ is in the process of renewing large construction permits. All current active permits have automatic coverage until August 9, 2011.

2.1.1.3 Production Facilities: Wellheads would be subsurface and production facilities would include one blowdown tank, a shared low-profile tank and two combo production units. QEP would consult with BLM prior to setting production facilities and equipment in order to minimize visual impacts and allow for the maximum area of the pad to be reclaimed. During the winter, well locations are typically visited once per day to check operations.

2.1.1.4 Interim Reclamation: Immediately after completion of drilling, all non-essential portions of the pad not needed for production operations and all borrow ditches and out-slope portions of the access road would be re-contoured to the appropriate pre-disturbance topography. Topsoil would be spread on unused areas of the pads and seeded as described in the SUP. Approximately 4.3 acres of the pad would be reclaimed leaving a one-acre footprint of disturbance for production purposes for the life of the well, expected to be 20 to 30 years. The access road would be reclaimed back to its designed width of 30 feet, for the life of the well. The 2.2-acre production footprint of disturbance for the pad and access road would be graveled to stabilize exposed soil.

2.1.1.5 Best Management Practices: QEP would incorporate additional BMPs into the project design, implementation, and interim reclamation to mitigate effects to soil, vegetation, wildlife, visual, and water resources, and air quality (see the Master Surface Use Plan (MSUP) for the SP 6D3-28 master well and the Revised VRPP, May 23, 2011, Appendix II).

2.1.1.5.1 Soil Resources: QEP would incorporate the following erosion and drainage controls as specified in their field-wide SWPPP, MSUP, and Revised VRPP, May 23, 2011, p. 2-3:

- Utilize straw wattles during pad construction and well development to reduce potential storm-water runoff and soil erosion and monitor all disturbed areas for erosion.
- Apply magnesium chloride to the access road to suppress fugitive dust.
- Install culverts along the access road to divert surface runoff.
- Balance cuts and fills on the well pad to minimize earthwork and grading.

- Bury all gathering lines, designed to accommodate future drilling, within the access road to reduce surface disturbance and eliminate the need to install additional pipelines.

2.1.1.5.2 Vegetation Resources: QEP would incorporate the following design features to minimize the effects to vegetation resources (Revised VRPP, May 23, 2011, p. 2-3):

- Irrigate the topsoil pile periodically to maintain biological viability.
- Mix woody slash debris into the topsoil to maintain biological viability.
- Chisel topsoil after re-contouring for quick vegetation re-growth.
- Plant a seed mix based upon the associated ecological site and include native grass species (MSUP, Item 10G).
- Monitor reclamation for adequate vegetation re-growth.
- Control weeds on all disturbed areas.

2.1.1.5.3 Visual Resources: QEP would incorporate the following design features to minimize the effects to visual resources (Revised VRPP, May 23, 2011, p. 2-3 and Appendix B):

- Locate the well pad down slope to provide tor the terrain to backdrop the facility and prevent sky lining.
- Re-contour the fill slope of the pad as soon as practicable after the wells have been put into production.
- Locate the wellheads subsurface.
- Stain or use a darker gravel mixture to reduce the color contrast of the pad and access road.
- Paint all production facilities a color harmonious with the surrounding landscape, which may include a camouflage paint scheme.
- Bury all gathering lines, designed to accommodate future drilling, within the access road to reduce surface disturbance and eliminate the need to install additional pipelines.

2.1.1.5.4 Water Resources: QEP would use the following well drilling measures to prevent contamination of all fresh-water zones and depletion of the fresh-water aquifer (Master Drilling Plan (MDP) for the SP 6D3-28 master well).

- Set deep conductor to 750 feet and cement it to the surface to seal off shallow-water zones.
- Set surface casing from approximately 7,600 feet and cement it to the surface to prevent any gas or condensate encountered from infiltrating into fresh water bearing lenses.

2.1.1.5.5 Air Quality: QEP would incorporate the following design features to minimize effects to air quality (Revised VRPP, May 23, 2011, p. 2-3):

- Utilize ‘green’ completions to eliminate the need for flaring during the completion phase.
- Transport gas, condensate, and produced water from the wells via QEP’s liquids gathering system to reduce truck traffic, airborne dust, and vehicular emissions.
- Water or treat access roads with a dust suppressant to reduce airborne dust.

QEP has also agreed to incorporate adaptive management during the implementation of above BMPs to allow for incremental management adjustments as needed (Revised VRPP, May 23, 2011, p. 9-11).

Refer to the Master Drilling Plan (MDP) and Master Surface Use Plan (MSUP) in the SP 6D3-28 APD file for maps, diagrams, and additional information regarding the proposed action.

2.1.2 Alternative II - No Action: Under the no action alternative, BLM would deny the APDs submitted by QEP for the SP 6D3-28 and 10B4-28 wells. No well pad, access road or pipeline would be constructed at this location. Selection of the no action alternative would still leave data gaps in this area, which could result in QEP's applying for delineation wells from other nearby locations in order to address these data gaps. It would likely result in proposed effects that would be equal to or greater than, those analyzed in this EA. In addition, it would limit QEP's opportunity to develop its valid federal lease (WYW08592).

2.1.3 Alternative III - Drilling wells from existing pads: Under this alternative, the two proposed delineation wells would be drilled from one or both of the nearest existing pads, instead of the proposed SP 7-28 well pad.

2.1.3.1 Physical Description: Existing well pads nearest to the proposed SP 7-28 well pad would be the SP 3-28 and the 4-33 well pads (Map 2.1-1). Distances from the proposed pad and existing pads to the bottom-hole targets of the SP 6D3-28 and SP 10B4-28 wells are shown in the following table:

Delineation Well	From SP 7-28 pad	From SP 3-28 pad	From SP 4-33 pad
SP 6D3-28	1,006 ft	1,950 ft	3,740 ft
SP 10B4-28	1,174 ft	2,985 ft	3,600 ft

As shown in the above table, the well pad nearest to the proposed the bottom-hole targets would be the existing SP 3-28 well pad, which was authorized on June 9, 1998 under WY046-EA98-142 and would be the most logical pad on which to locate the SP 6D3-28 and 10B4-28 wells.

The existing SP 3-28 well pad is approximately 2.8-acres and was placed at this location rather than at an alternative site to the east and west because the terrain was less steep and it would be less visible to the town of Pinedale. The 15,000-foot access road was moved to its current location during the onsite on May 13, 1997, to avoid crucial winter range for mule deer. Total new surface disturbance for the original SP 3-28 proposal was 8.6 acres on federal land.

A 3.1-acre expansion of the SP 3-28 well pad was authorized on July 19, 2005, under WY100-EA05-264, to accommodate the SP 2A-28D well. The expansion was located in an area of less than 3 percent slope and in a drainage that was screened by surrounding hillsides. To further reduce visual impacts, the well pad was constructed as small as safely possible and is longer and narrower than normal to balance cuts and fills.

In order to accommodate a rig capable of reaching the bottom-hole targets of these wells from the existing SP 3-28 pad, the pad would have to be expanded to the southeast, which would place the pad expansion between two small unnamed drainages in an area of 13- to 15-percent slopes. QEP has not evaluated this alternative, but has indicated that the resulting new surface disturbance would be 'considerably more' than their average 5-acre expansions because of the steeper slopes. The existing access road would be utilized and no additional access roads would be required. The estimated total new surface disturbance for the expansion under this alternative as analyzed in this EA, could be as much as 10 acres.

2.1.3.2 Well Drilling and Completion: The process of the drilling and completing the proposed wells would be the same as for the proposed action (Sec. 2.1.1.2, Proposed Action). Lateral reaches to the bottom-hole targets of the proposed SP 6D3-28 and 10B4-28 wells from an expansion of the existing SP 3-28 well pad would be approximately 1,950 feet and 2,985 feet respectively.
`
On February 1, 2011, QEP's drilling engineers and geologists met with BLM staff concerning the engineering limitations of QEP directionally drilling beyond 2,300 feet on Stewart Point. More than 98 percent of QEP's directional gas wells in the PAPA have a less than 2,300-foot lateral reach (other operators in the PAPA have concurred). Long-reach (more than 2,300 feet) wells on Stewart Point are expected to carry substantially high well-control and mechanical risks because of the exceptionally high pressures anticipated in the SP 7-28 pad wells. According to QEP's engineers, Stewart Point appears to have naturally occurring high pressures and has not seen depletions from virgin pressures because of extensive drilling as have other locations in the PAPA. Drilling mud weights in Stewart Point wells commonly range between 16 and 17 pounds per gallon (ppg) compared to 12 to 15 ppg in other areas of the PAPA.

Extremely high pressures, as well as the geologic integrity of the formations (Wasatch and Fort Union), limit the angles of inclination necessary to extend the reach distance beyond 2,300 feet. As positioned on the proposed SP 7-28 well pad, the tangent angle of inclination for the two proposed wells would be approximately 14 percent. The projected reach to the bottom-hole target of the SP 10B4-28 from the nearest existing pad, the SP 3-28 pad, is 2,985 feet. The angle of inclination required to obtain a lateral reach of nearly 3,000 feet would be 30 to 36 percent. In order to use a two-percent build, it would be necessary to start the 'kick off' for the directional well at between 200 and 300 feet deep rather than 2,000 feet deep.

2.1.3.3 Production Facilities: Production facilities would be located on the existing SP 3-28 well pad, which would require an increased footprint of disturbance to accommodate all production facilities. No design plans have been submitted for this alternative and would be required.

2.1.3.4 Interim Reclamation: Interim reclamation on all non-essential portions of the pad not needed for production operations would be accordance with the SUP submitted as part this alternative.

2.1.3.5 Best Management Practices: QEP would incorporate BMPs in accordance with a VRPP which would be submitted as part of this alternative.

2.1.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: BLM requested that QEP analyze drilling the proposed SP 6D3-28 and the 10B4-28 delineation wells from the proposed SP 7-28 well pad and co-locating the production facilities on the existing SP 3-28 well pad. In addition, BLM also requested that associated pipelines be placed in pipeline bores through the adjacent hillside to reduce surface disturbance and visual effects. This alternative was analyzed in QEP's May 23, 2011 Revised VRPP. On June 14, 2011, QEP provided additional information regarding the issues associated with co-locating facilities on the existing SP 3-28 production pad at BLM's request.

2.1.4.1 Physical Description: Under this alternative, the proposed SP 7-28 well pad and access road would still be necessary for the drilling and completion of the proposed delineation wells. The new surface disturbance resulting from the well pad and access road construction would be the same as for the proposed action, approximately 7.5 acres (Sec. 2.1.1.1, Proposed Action).

Because gas from each well is measured after it has been separated from produced water and condensate, three phase gas produced from the SP 6D3-28 and the SP 10B4-28 wells would have to be transported to the existing SP 3-28 production pad via pipeline.

Transporting three-phase gas prior to separation and dehydration increases the probability of hydrate formation and pipeline corrosion. Hydrates, formed when methane and water combine under pressure, create an ice-like substance similar to a packed snow ball, which can exist at temperatures above freezing. The formation of hydrates impedes or blocks the flow of gas and liquids through the pipeline.

The pressure in the lines would equal that of the well, which will be much greater than that of a pipeline downstream of production equipment; resulting in an increased opportunity for hydrate formation. The pipelines cannot be buried in the access roadbed because driving over them would push the frost line down into the lines causing line breaks from the freezing of hydrated gas, which is more sensitive to pressure and temperature. Therefore, the pipelines would have to be placed in pipeline bores through the adjacent terrain.

An 1,800-foot or greater pipeline bore from the proposed SP 7-28 well pad to the existing SP 3-28 production would require a 100-foot by 100-foot work area off the edge of the SP 3-28 well pad to accommodate the boring drill and equipment. This would result in an additional 0.23 acres of new surface disturbance or a total of nearly 7.8 acres of new surface disturbance under this alternative.

If a leak occurs in the line, it would be un-repairable due to the depth and size of the excavation needed to repair the line. As a result, the line would have to be abandoned in place and a new line re-bored, causing a redisturbance of the 0.23 area required for the boring equipment and pipe. Line breaks would most likely occur in the winter. QEP implements pipeline boring as an

absolute last option for river crossings or major road crossings because of the increased expense and operational complexities.

Given the climatic conditions in the PAPA, QEP considers the distance between the SP 7-28 and the SP 3-28, too great to effectively transport a three phase gas stream because of hydrate formation in the lines. Methods to mitigate the formation of hydrates, other than separating and dehydrating three-phase gas as close to the wellheads as possible are: 1) reducing or releasing pressure in the lines, 2) increasing the temperature of the hydrated gas stream, and 3) introducing a hydrate inhibitor, usually methanol. Pipeline pigging can be used to keep hydrates and fluids moving in a pipeline but does not inhibit hydrate formation. All of these methods require increased operator presence during cold weather at the site to monitor the pipeline for hydrate formation in the lines.

QEP's experience at a similar well on the Mesa indicates that these methods require at least two truck visits to the site daily to check for hydrate formation and administer additional methanol. If hydrates do form, gas must be vented to the atmosphere.

2.1.4.2 Drilling and Completion: The drilling and completion of the proposed delineation wells would be the same as for the proposed action (See 2.1.1.2, Proposed Action).

2.1.4.3 Production Facilities: Co-locating the production facilities on the SP 3-28 production pad would require an additional 0.1 acres for placement of the separator. The production footprint on the proposed SP 7-28 well pad would be reduced by approximately 0.14 acres, however, a blow-down tank would still be necessary for safety reasons at the SP 7-28 well pad. Production facilities would be painted a color consistent with those already present at the existing SP 3-28 well pad.

2.1.4.4 Interim Reclamation: QEP has indicated that the SP 3-28 production footprint would be expanded by approximately 0.1 acre to accommodate production facilities for the SP 6D3-28 and 10B4-28 wells, leaving a 2.6-acre working production footprint. The 0.23 acres of disturbance off the pad necessary to locate the boring drill and equipment would be reclaimed according to the SUP to be submitted for this action.

2.1.4.5 Best Management Practices: QEP would incorporate design features and BMPs similar to those described in the proposed action and submitted as part of an SUP for this action (Sec. 2.1.1.5, Proposed Action).

2.2 Alternatives Considered but Eliminated from Detailed Analysis

Two alternatives were considered but eliminated from detailed analysis: 1) the original 2001 proposal and 2) the revised 2006 proposal (Map 2.1-1).

2.2.1 Alternative V - Original proposals as staked in 2001: QEP submitted NOSs to drill two vertical natural gas delineation wells in the project area; the SP 7-28 and the SP 11-28 wells (Map 2.1-1). The SP 7-28 was submitted on October 9, 2001 and would have been located in the SWNE, Sec. 28, T. 33 N., T. 109 W. The SP 11-28 was submitted on October 19, 2001 and

would have been located in the NESW, Sec. 28, T. 33 N., R. 109 W. Wildlife, visual, drainage, and cultural issues were identified during onsites on September 1, 2001 and July 23, 2002. As a result of these potential effects, QEP withdrew the NOS for the SP 7-28 on July 14, 2003. The NOS submitted for the SP 11-28 expired on July 24, 2003 and was resubmitted for the SP 11A-28D on July 24, 2003. It was withdrawn on June 21, 2004, after an onsite on November 26, 2003 recommendation to move the site and submit a VRPP.

This alternative was dropped from further consideration because of conflicts involving wildlife, cultural, visual, grazing, and water resources that could not be resolved at the proposed sites. As a result, QEP withdrew the NOSs for the SP 7-28, 11-28, and 11-28D.

2.2.2 Alternative VI - Proposal as staked in 2005-2006: QEP submitted NOSs for the SP 6D3-28 and the 10B4-28 delineation wells to be drilled on the proposed SP 7-28 pad on July 20, 2006 and September 5, 2006, respectively (Map 2.1-1). Twenty-six public comments were received as a result of a public onsite on August 26, 2006. VRM analysis determined that the pad and access road would be visible from Hwy 191. Tribal consultation determined that the proposed location was too close to an area considered important by Native Americans. A live spring and range improvement were located adjacent to the proposed pad. An onsite with QEP, BLM and the BLM Wyoming State Office on September 11, 2007 resulted in the recommendation that the pad be moved northward into the hill, production facilities be placed on the northernmost corner of the pad to minimize visual impacts, the access road be shortened and interim reclamation include sagebrush transplants.

This alternative was dropped from further consideration because the pad was moved to its current location to address visual, cultural and wildlife issues identified during the public tours, Native American consultations, and public scoping.

3.0 AFFECTED ENVIRONMENT

This section describes the environmental characteristics, conditions and trends in the project area, as shown in Map 2.2-1, which would be affected by the proposed action and the alternatives. Those critical elements not present or affected by the proposed action or alternatives are listed below and are not analyzed further in this environmental assessment:

- Wilderness/ACECs/WSAs
- Prime or Unique Farmlands
- Forests and Rangelands
- Environmental Justice
- Wild and Scenic Rivers
- Fish Habitat
- Paleontology
- Lands with Wilderness Characteristics

Refer to the following sections in Chapter 3, Affected Environment, of the PAPA FSEIS for a thorough description of the affected environment associated with the PAPA and incorporated by reference:

- Geology and Soils: Sec. 3.23, Geology, Minerals, and Geologic Hazards, p. 3-79, and Sec. 3.17 Soil Resources, p. 3-105.
- Vegetation Resources: Sec. 3.18 Vegetation Resources, p. 3-108.
- Wildlife Resources: Sec. 3.22, Wildlife and Aquatic Resources, p. 3-129.
- Cultural Resources: Sec. 3.10, Cultural and Historical Resources, p. 3-57.
- Paleontological Resources: Sec. 3.14, Paleontological Resources, p. 3-82.
- Visual Resources: Sec. 3.9, Visual Resources, p. 3-53.
- Recreation Resources: Sec. 3.8, Recreation Resources, p. 3-48.
- Livestock Grazing: Sec. 3.19 Grazing Resources, p. 3-112.
- Groundwater Resources: Sec. 3.15, Groundwater Resources, p. 85.
- Surface Resources: Sec. 3.16, Surface Water Resources, p. 3-92 and Sec. 3.20, Wetlands, Riparian Resources and Floodplains, p. 3-116.
- Residences: Sec. 3.7, Land Use/Residential Areas, p. 3-42, and Sec. 3.12, Noise, p. 3-77.
- Air Quality: Sec. 3.11, Air Quality, p. 3-64.
- Hazardous Materials: Sec. 3.23, Hazardous Materials, p. 3-154, and App. 12, p. 12-1.

3.1 Geology and Soils

The Green River and Wasatch formations make up the bedrock in the Stewart Point area of the PAPA. It is overlain by Quaternary gravel and fan deposits along the flanks of the anticline in the project area.

The Natural Resource Conservation Service (NRCS) is currently mapping third order soils in Sublette County. They created a map of Sublette County soils that included a database of the physical and chemical properties and their ecological site descriptions (ESDs). The project area receives approximately 10 to 14 inches of precipitation per year. None of these soils are special

management soils. Detailed map unit descriptions are shown in Map 3.1-1 and included in Appendix II. Soils in the project area include:

- Soil map unit 2216 (Scooby-Sandbranch soil complex) is a deep, well drained, upland soil found on 1 to 8 percent slopes. The primary ESD for this map unit is Clayey (CY) 7-9 (inches of precipitation per year) Green River and Great Divide.
- The soil map unit 5608 (Taffom-Conpeak-Badland soil complex) is a shallow to deep, well drained, upland soil, found on 15 to 60 percent slopes. The project area is located on slopes less than 8 percent. The primary ESD is Gravelly (Gr) 7-9 inches Green River and Great Divide.
- The soil map unit 5703 (Foursees-Badland soil complex) is a deep, well drained upland soil found on 4 to 65 percent slopes. The project area is located on slopes less than 8 percent. The primary ESD is Gravelly (Gr) 7-9 inches Green River and Great Divide.

3.2 Vegetation Resourses

Vegetation in the project area is primarily consistent with that of the Clayey (CY) 7-9-inch Green River and Gravelly (GR) 7-9-inch Green River ecological sites as per the associated soils. The vegetative community of the CY ecological site consists mainly of Wyoming big sagebrush (*Artemisia tridentata*) overstory and mid-stature bunchgrass understory, including that of Indian ricegrass (*Achnatherum hymenoides*) and bottlebrush squirreltail (*Elymus hysterix*). Western wheatgrass (*Agropyron smithii*) is also found in the herbaceous understory, as with perennial forbs including phlox (*Phlox spp*), and other small stature shrubs, such as Gardner's saltbush (*Artiplex gardneri*).

The vegetation associated with the GR ecological site primarily includes mid-stature bunchgrasses such as bluebunch wheatgrass (*Pseudoroegneri spicata*), Indian ricegrass, and needle-and-thread grass (*Hesperostipa comata*). Shrubs such as rubber rabbitbrush (*Ericameria nausiosa*), green rabbitbrush (*Ericameria viscidifloris*), and winterfat (*Krasheninnikovia lanata*) are also components of the GR vegetative community.

Invasive non-native species that have invaded areas of new construction in the project area include Russian thistle, halogeton, cheatgrass, and lambs quarter. The invasion of noxious weeds, such as henbane has also occurred.

No threatened or endangered plant species are found in the project area.

3.3 Wildlife Resources

The project area is located within crucial winter range for mule deer as designated by the WGFD and in delineated mule deer and pronghorn migration corridors as defined by the Sawyer and Nielson report, 2011, and shown in Map 3.3-1 and 3.3-2. It is also located within the sage-grouse winter concentration habitat. Pygmy rabbit presence has been documented in the project area and suitable habitat is present in surrounding draws. The project area is located approximately 0.5 miles from an active raptor nest. Sage-grouse leks, crucial big game habitat, and occupied raptor nests are considered noise sensitive (PAPA FSEIS, Sec. 3.12, p. 3-77). Studies concluded that the highest noise levels occurred during well completion operations.

The project area is located within the Sublette Mule Deer Herd Unit, which has been intensively studied since 1998 and is the subject of recent monitoring efforts that have determined that the population has dropped below the threshold established in the Wildlife Monitoring and Mitigation Matrix (PAPA ROD, Appendix B, p. B-1).

The following wildlife surveys and reviews have been conducted in the area surrounding the proposed action:

- A review of existing data by BLM wildlife biologists on February 8, 2011 and March 29, 2011, indicated that there are no active nests within two miles of the proposed action or any of the alternatives.
- A Greater sage-grouse nest clearance survey was performed by Wyoming Wildlife Consultants (WWC) within one mile of the proposed action on May 3, 2008. The survey identified one female sage-grouse within 300 feet of the proposed action, several fresh foraging pellets, and a portion of a sage-grouse eggshell within the survey area. No direct evidence of nesting could be found.
- A pygmy rabbit clearance survey was conducted by WWC on September 18, 2006 within 0.25 miles of the proposed action. Two pygmy rabbit burrow systems were found, but no pygmy rabbits were observed.
- A second pygmy rabbit clearance survey was performed within 0.25 miles of the proposed action by WWC on October 18, 2007, during which 17 active pygmy rabbit burrow systems and 13 burrow systems with old pellets were found in every direction from the proposed pad. No pygmy rabbits were observed.
- A pygmy rabbit was conducted on May 27, 2011, confirmed the presence of active burrows within 0.25 miles of the proposed action. No pygmy sign was detected within the limits of the pad disturbance. The majority of evidence was found in the surrounding draws and adjacent hillsides.
- Raptor nest surveys were conducted on April 18 and May 3, 2008, by WWC within one mile of the proposed action. No active raptor nests were found during the April 18, 2008 survey. A pair of Swainson's hawks was observed at a nest along the Sill Ditch during the May 3, 2008 survey. WWC reported that the proposed action was located outside the 0.5-mile buffer of the proposed action.

The area of potential effect (APE) is not known to provide habitat for any threatened and/or endangered species nor is it known to provide habitat for any additional BLM-designated sensitive species. Threatened and/or endangered species will not be discussed further in this EA.

3.4 Cultural Resources

Historic properties are those cultural resources that are listed on, or eligible for listing on the National Register of Historic Places (NRHP). They can be buildings, structures, objects, sites, or districts. To be considered eligible for inclusion on the National Register, a resource must be at least 50 years old, must meet at least one of the eligibility criteria and must possess a majority of the aspects of integrity as defined in the National Historic Preservation Act (Sec. 3.10, Cultural and Historical Resources, p. 3-57).). Specific details about archaeological sites and cultural

resources are not included in this document and are not available for public disclosure in accordance with 43 CFR 7.18.

Western Archaeological Services, Inc. (WAS) completed Class III cultural resource inventories and submitted the results of evaluative testing on behalf of QEP on June 1, 2007, March 19, 2008, June 13, 2008 and January 11, 2001. These inventories resulted in the identification of two archaeological sites: 48SU6227, not eligible for the National Register; and 48SU3193, a National Register eligible property.

Project notification and requests for consultation were sent to the Eastern Shoshone, Uinta-Ouray Ute, Northern Arapaho and Shoshone-Bannock tribes (who deferred to the Eastern Shoshone Tribe). In response, government to government consultations were conducted with the Eastern Shoshone Tribe on September 1, 2006, August 27, 2007, June 22, 2009 and May 21, 2010; the Northern Arapaho Tribe on May 22, 2007 and the Uinta-Ouray Ute Tribe on May 4, 2010 and August 4, 2010. These consultations focused on site 48SU2019 located more than one-mile from the proposed action. Site 48SU2019 is eligible for the NRHP and considered an Indian Sacred Site by the Eastern Shoshone Tribe and the BLM (as defined by Executive Order 13007). The Eastern Shoshone Tribe previously provided specific guidance that this type of cultural resource should be avoided by at least one mile (PAPA FSEIS, Sec. 3.10.1, p. 3-57). During tribal consultations and public meetings concerning the proposed action, the BLM committed to the tribes and the public to avoid the sacred site by at least one mile and the project location was moved to uphold that commitment.

The BLM sent additional consultation letters to the Eastern Shoshone, Northern Arapaho Tribe and Uinta-Ouray Tribe on April 27, 2011. The letters provided a summary of the project and included the BLM's report regarding site 48SU2019. The letters asked if there was any additional information that should be considered regarding the project or the site. No response to the letters was received by BLM. The BLM made follow-up phone calls to those three tribes between May 23 and May 31, 2011 to confirm that they had received the letters and to inquire if they had additional information or comments on the project or the site. Shoshone Tribal Representative Mr. Wilfred Ferris was reached by telephone on May 24 and 26, 2011. Mr. Ferris stated that the relocation of the well pad beyond one mile and the application of VRPP fulfilled the Eastern Shoshone's concerns regarding this proposed development. Attempts to contact the Arapaho and Unita-Ouray Ute Tribes for any final comments or additional information have been unsuccessful.

Numerous consultations were also conducted with the Wyoming SHPO between 2009 and 2011, including field visits, conference calls, meetings, and letter correspondence. These consultations focused on mitigation of adverse effects to site 48SU3193 and identification of the historic property at 48SU2019.

In addition to extensive tribal consultation and SHPO consultation, BLM archaeological staff took a hard look at all available ethnographic and ethnohistorical literature concerning traditional cultural practices. The purpose was to examine if and how the area is traditionally used in modern times, and to identify any other sites in the area that might be related to the sacred site or

that may hold traditional religious or cultural significance. No additional sites or cultural resources were identified.

A Class III inventory was completed on June 4, 1998, for the existing SP 3-28 pad, road and pipeline and included 4.5 miles of the existing Mesa Road. No historic properties or cultural resources were identified in the APE (WY046-EA 98-142, June 9, 1998). Native American consultation was conducted for the existing SP 3-28 pad and subsequent pad expansion. No tribal issues were identified during those consultations.

A Class III Cultural Resource inventory was completed on June 24, 2005 for the existing SP 2A-28D expansion to the SP 3-28 pad. No historic properties or cultural resources were found during inventory or pad construction (WY100-EA05-264, July 19, 2005).

3.5 Visual Resources

The project area would be located in an area designated under the Visual Resource Management System (VRM) as Class II and III (Map 3.5-1) and visible from Hwy 191, just south of the town of Pinedale, subdivisions and ranches along Hwy 191, Ruby Hill, and the New Fork River. Portions of the project area would be located in a VRM Class II area with high scenic values. The management objectives for the VRM classes within the project area are described below (PAPA FSEIS, Sec. 3.9.2, p. 3-54).

The objective of VRM Class II is to retain the existing character of the landscape. The level of change to the character of this landscape should be low; management activities may be seen, but should not attract the attention of the casual observer. Changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.

The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change should be moderate; management activities may attract the attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The project area would be located in a basin which appears natural and contains few visually intrusive human created features. The characteristic landscape foreground is the New Fork River with good variety of color and steeply rising bluffs in the near background. The visible features are primitive two-track roads, an allotment fence located one mile west of the project area and a distant dugway cut into the face of the Mesa bluffs. The existing gas field developments, located north of the basin, are largely screened from view by background ridgelines.

3.6 Recreation Resources

The project area is popular for sightseeing, horseback riding, trail cycling and off-road vehicles (ORVs) because of its proximity to Pinedale, Pine Creek, the New Fork River, and Hwy 191. The project is located in the PFO Extensive Recreation Management Area (in contrast to Special Recreation Management Area). Management objectives are custodial and directed at providing the minimum infrastructure necessary to protect public health, safety and natural resources.

Pine Creek, the New Fork River and Boulder Creek are popular fishing streams for recreationists and outfitters. A fishing access point is located on the New Fork River near its confluence with Pine Creek approximately 2.3 miles north of the proposed action. A second access point is located on the New Fork River just north of the Boulder Creek confluence, approximately 3.2 miles to the southeast of the project area (Map 3.5-1).

The area offers opportunities to experience dispersed recreation activities such as hunting, wildlife watching, horseback riding and motorized and non motorized activities. The recreational setting is semi-primitive to rural. Visitors could enjoy desired recreational pursuits in a natural and infrequently visited area close to Pinedale. The recreational setting for the area located north of the project area has been changed by fluid mineral development from semi-primitive to urban (industrial).

The project area's motorized ORV designation is 'limited'. Motorized travel is restricted to existing roads and trails and prohibited seasonally to protect critical winter range for mule deer. Cross-country motorized travel is prohibited. The existing road network is comprised of primitive routes created by the passage of motorized vehicles. Area visitors are generally local residents seeking a recreational experience. Most visitations occur during the summer months when the area is clear of snow. Grazing permittees visit the area less frequently, mostly during the spring and early fall.

3.7 Livestock Grazing

The project area is located within the Mt. Airy Common Allotment (#02049), which is permitted for cattle grazing from May 16 through June 25 at 757 animal unit months (AUMs). There are 9,732 public acres and 7 private acres within this allotment, for an average of approximately12.9 acres per AUM.

There are six active range improvements within one mile of the proposed wells (Map 3.7-1):

- The North Mesa Reservoir (RIP #1870), stock reservoir, located approximately 600 feet southeast of the project area. It originates from the Mt. Airy Well #2 (RIP # 4694, located approximately 1.8 miles west of the project area).
- The Mt. Airy Pipeline East #1 (RIP # 5277), watering trough, located approximately 0.9 miles south of the project area. It originates from the Mt. Airy Well #2 (RIP # 4694) and is off the same pipeline which ends at trough #2 below.
- The Mt. Airy Pipeline East #2, watering trough, located 0.8 miles southeast of the proposed action. It originates from the Mt. Airy Well #2 (RIP # 4694) and is off the same pipeline which begins at trough #1.
- Mt. Airy Reservoir #1, water pit for cattle, located approximately 0.6 miles southwest of project area.
- Mt. Airy Reservoir #2, water pit for cattle, located approximately 1.1 miles southwest of project area.
- Mt. Airy Browse F, vegetation manipulation, located approximately 1 mile west of the project area, was a sagebrush area treated in 1968 to remove sagebrush to create more grassland for stock.

All water developments, except for the North Mesa Reservoir, are in use and integral for continued livestock management. As cattle move off the Mesa by mid-June, the waters are left available for continued wildlife use. The North Mesa Reservoir requires maintenance, though a spring has developed below the dam.

3.8 Water Resources

The project area is located in the New Fork River Stewart Point subwatershed. It is located approximately 1.4 miles west of the New Fork River and approximately 0.52 miles from the Sill Ditch. Several unnamed intermittent drainages are located in the project area.

The project area is located outside of any mapped 100-year floodplains as defined in the Pinedale RMP (Sec. 2.3.13, Objective 2c, p. 2-42). There are three small palustrine wetlands within one mile of the project area (Map 3.8-1). All of the wetlands are associated with impoundments created for stock watering, one of which is the North Mesa Reservoir (RIP #1870), a stock reservoir and range improvement. The project area is located more than 500 feet from any wetlands in accordance with the PAPA ROD, Appendix 3, p. A3-19.

Groundwater is found primarily in the Wasatch formation. There are three water wells in the project area, all drilled by QEP for their drilling operations on Stewart Point (Map 3.7-1):

- P138913W: It was completed on September 7, 2001 and is located on the SP 14-20 pad in the SESW, Sec. 20, T. 33N, R. 109 W. It is 1,000 feet deep, has a static water level of 350 feet and yields approximately 110 gpm. This well would be used to provide water for the drilling of the proposed delineation wells.
- P144091W: It was completed on April 22, 2002 and is located on the SP 4-33 pad in the NWNW, Sec. 33, T. 33N, R. 109 W. It has a total depth of 980 feet, has a static water level of 480 feet and yields 90 gpm.
- P139248W: It was completed on September 6, 2001 and is located on the SP 11-21 pad in the NESW, Sec. 21, T. 33 N., R. 109 W. It is 1,043 feet deep, has a static water level of 650 feet and yields 110 gpm.

There are no stock or domestic water wells within one mile of the project area. The nearest domestic water well is located at the Mocroft Ranch on Hwy 191, approximately 1.2 miles east of the project area. It has a depth of 92 feet and is located within the alluvial valley of the New Fork River.

3.9 Residences

The project area is located approximately 4 miles south of the town of Pinedale and approximately 1.2 miles from the nearest residence near Hwy 191 on the Mocroft Ranch. It would be visible and potentially audible from the town of Pinedale and subdivisions along of Hwy 191, especially during the well drilling and completion phase. There are no residences or dwellings within 0.25-miles of the proposed action as required by the Pinedale RMP (Appendix 3, p. A3-5).

3.10 Air Quality

Air quality in the PAPA, including the project area, is subject to the Wyoming and the National Ambient Air Quality Standards. The closest monitoring site to the project area is the Pinedale monitoring site at approximately 4.5 miles. The Sublette County ambient air monitoring stations recorded elevated ozone levels on widely separated occasions spanning three consecutive years at the Pinedale and Boulder stations, 2006, 2007, and 2008, which resulted in a recommendation for nonattainment from the governor of Wyoming to EPA in March 2009. There were no exceedences in 2009 or 2010. To date, there have been 13 days of nonattainment in 2011. Although elevated ozone levels occur between May and September, they tend to peak during the winter, primarily in February and March, which is atypical when compared to other areas of the country where ozone levels are elevated. Hypotheses on the causes of these elevated zones are being explored.

3.11 Global Climate Change

Climate change refers to any significant change in the measure of climate, such as precipitation and temperature, lasting for an extended period of time (decades or longer). Temperatures in western Wyoming are expected to increase by 0.25ºF to 0.4ºF per decade and precipitation is expected to decrease by 0.1 to 0.6 inches per decade (Sec. 3.2.2.1.2, EA, 2011, p. 56).

Several activities that occur in PFO area contribute to climate change, including: large wildfires, activities using combustion engines, changes to the natural carbon cycle, changes to radioactive forces and reflectivity, and emissions of greenhouse gases (GHGs). Some GHGs, such as carbon dioxide (CO_2), occur naturally. Other GHGs, including CO_2, as well as, methane (CH_4), nitrous oxide (N_2O), and fluorinated gases, are created and emitted solely through human activities, including oil and gas development. Other activities in with the potential to contribute to climate change include soil erosion from disturbed areas and fugitive dust from roads, which have the potential to darken snow-covered surfaces and cause faster snow melt. Without additional meteorological monitoring systems, it is difficult to determine spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change (Sec. 3.2.2.1.2, EA, 2011, p. 56).

3.12 Hazardous Materials

Hazardous materials would be used during drilling, completion, and production of the proposed actions. The term hazardous materials as used here means: 1) any substance, pollutant, or contaminant (regardless of quantity) listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA, 2) any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, and 3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.

In accordance with 29 CFR 1910.1200, a Material Safety Data Sheet for every chemical or hazardous material brought on-site will be kept on file at the operator's field office (PAPA ROD, Appendix A.14, p. A-15).

4.0 Environmental Consequences

This chapter discloses the effects of the alternatives on the human environment. Mitigation measures intended to further reduce effects have been included in the alternatives where appropriate. Those critical elements not present or not affected by the proposed action or alternatives are listed below and are not analyzed further in this environmental assessment:

- Wilderness/ACEC
- Prime or Unique Farmlands
- Forests and Rangelands
- Environmental Justice
- Wild and Scenic Rivers
- Fish Habitat
- Paleontology
- Threatened and Endangered species
- Lands with Wilderness Characteristics
- Floodplains

Refer to Chapter 4, Environmental Consequences, PAPA FSEIS, for a detailed analysis of the environment effects of the following resources in the PAPA and referred to by reference:

- Geology and Soils: Sec. 4.11, Geology, Minerals, and Geologic Hazards, p. 4-101, and Sec. 4.15, Soil Resources, p. 4-117.
- Vegetation Resources: Sec. 4.16, Vegetation Resources, p. 4-121.
- Wildlife Resources: Sec. 4.20, Wildlife and Aquatic Resources, p. 4-149.
- Cultural Resources: Sec. 4.8, Cultural and Historic Resources, p. 4-65.
- Visual Resources: Sec. 4.7, Visual Resources, p. 4-59.
- Recreation Resources: Sec. 4.6, Recreation Resources, p. 4-53.
- Livestock Grazing: Sec. 4.17, Grazing Resources, p. 4-126.
- Groundwater Resources: Sec. 4.13, Groundwater Resources, p. 4-104.
- Surface Water Resources: Sec. 4.14, Surface Water Resources, p. 4-111, and Sec. 4.18, Wetlands, Riparian Resources and Floodplains, p. 4-132.
- Residences: Sec. 4.5, Land Use and Residential Areas, p. 4-46, and Sec. 4.10, Noise, p. 4-98.
- Air Quality: Sec. 4.9, Air Quality, p. 4-73.
- Hazardous Materials: Sec. 4.21, Hazardous Materials, p. 4-173.

4.1 Geology and Soils

4.1.1 Alternative I – Proposed Action: The proposed action would result in approximately 7.5 acres of new surface disturbance. Approximately 4.3 acres of the well pad would be reclaimed leaving a one-acre footprint of disturbance for production purposes. The access road would be reclaimed back to its designed width of 30 feet. This would leave approximately 2.2 acres of the well pad and the access road bare for the productive life of the well, which is expected to be approximately 20 to 30 years.

4.1.1.1 Direct/Indirect Effects: Effects to soil resources from erosion would be greatest after initial soil disturbance during pad and road construction. Potential effects to upland soils as a result of the proposed action would include increased wind and water erosion, loss of topsoil, decreased vegetation productivity and the introduction of noxious weeds. Alteration of the physical and chemical characteristics of the long-term storage of topsoil would decrease soil productivity and prevent or delay the re-establishment of vegetative cover.

The NRCS calculated the tolerable soil loss for the soil map units in the project area based on rainfall erosivity, soil erodibility, slope length and gradient, plant cover, and erosion control practices. Tolerable soil loss is the maximum annual amount of soil, which can be removed before the long-term natural soil productivity is adversely affected. Generally, soils with deep, uniform, stone free topsoil materials and/or not previously eroded have been assumed to have a higher tolerance limit than soils which are shallow or previously eroded. Tolerable soil losses for the soils in the project area are shown below and in Appendix II:

- The tolerable soil loss for map unit 2216 (Scooby-Sandbranch soil complex), which underlies approximately 80 percent of the proposed SP 7-28 pad and 25 percent of the proposed access road, would be approximately 2 to 5 tons per acre per year.
- The tolerable soil loss for map unit 5703 (Foursees-Badland soil complex), which underlies approximately 25 percent of the proposed access road, would be approximately 5 tons per acre per year.
- The tolerable soil loss for map unit 5608 (Taffom-Conpeak-Badlands soil complex), which underlies approximately 50 percent or the proposed access road would be approximately 2 to 4 tons per acre per year.

Based on a wind erosion index, tolerable soil loss (T factor), water erosion factor (k factor), and the slope-effect factor (LS value, the combined effects of slope length and steepness), at the proposed action; all soils were determined to be highly erodible in the project area.

Erosion control measures that QEP has proposed as design features, would reduce erosion from the pad and access road during construction and drilling (Sec. 2.1.1.5.1). In addition, other interim reclamation measures will be performed according to BMPs detailed in The Gold Book, Fourth Edition, Revised 2007, and attached in the Revised Surface Use Plan of this document.

4.1.1.2 Cumulative Effects: Within one mile of the proposed action, there are seven active well pads, the SP 3-28, 11-21, 14-20, 1-29, 16-29, 15-29 and 4-33, and 26 producing natural gas wells. Current surface disturbance would include approximately 58 acres from existing pads and approximately 45 acres from existing access roads and pipelines. This would result in approximately 103 acres of surface disturbance, not including the proposed action, in the 5703 (Foursees-Badland), 5608 (Taffom-Conpeak-Badland), 5607 (Golphco Chinatown), and 2106 (Jemdilon) soil map units.

Of the 103 acres of existing surface disturbance, approximately 44 acres of the existing pads have been reclaimed leaving a total of 14 acres of operational footprints remaining for the life of the wells. The proposed action would result in an additional 7.5 acres of new surface disturbance, of which 5.3 acres would be reclaimed.

This would result in approximately 61 acres (15 acres of operational well pad disturbance and 46 acres of access roads) bare for the productive life of the wells or about 2.3 percent of the 2,562 acres within one mile of the proposed action (Map 4.1-1).

Additional design features and BMPs proposed by QEP and described in Sec. 2.1.1.5.1, BMPs, would reduce the soil losses from erosion of the pads and access roads.

Additional effects to soils within the project area include trampling of soils by cattle, mule deer and pronghorn as well as the removal of established vegetation and vegetation used for interim reclamation on well pads, access roads and pipeline ROWs. ORV use of two tracks and established roads and increased human presence could further erode soils.

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which considered impacts from wind and water erosion, loss of topsoil, decreased soil and vegetation productivity, and the introduction of invasive non-native species (Sec. 4.15.2, p. 4-117-118).

4.1.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 well pad, access road and pipeline would not be constructed. Effects to soil resources would be the same as current management practices under the PAPA ROD. No additional soil resources would be affected.

4.1.3 Alternative III - Drilling wells from existing pads: Under this alternative, the proposed action would not be constructed. Instead, the existing SP 3-28 well pad would be expanded to the southeast between two small unnamed drainages in an area of 13- to 15-percent slopes. BLM suggested this alternative, QEP did not submit drawings or plans. They estimate that this alternative would require a larger than average pad to accommodate a rig capable of drilling long-reach wells. The existing access road would be utilized and a new access road would not be required. The acreage used in this analysis for the pad expansion was 10 acres.

4.1.3.1 Direct/Indirect Effects: The direct/indirect effects to soil resources from constructing a 10-acre expansion in map unit 5608 (Taffom-Conpeak-Badland soil complex) would be similar to those described under the proposed action (Sec. 4.1.1.1). The tolerable soil loss calculated by NRCS for this soil type is approximately 2 to 4 tons per acre per year.

The well pad expansion would be constructed in an area of 13- to 15-percent slopes. The PAPA FSEIS indicated that disturbances to soils on slopes greater or equal to 15 percent, with high erosion potential are expected to increase soil erosion and sedimentation in aquatic habitats substantially above current conditions (Executive Summary, p. viii).

QEP would incorporate the same erosion controls described in the proposed action to reduce the effects to soil resources (Sec. 2.1.1.5.1, Proposed Action).

4.1.3.2 Cumulative Effects: There are seven active pads, the SP 3-28, 11-21, 7-20, 14-20, 1-29, 16-29, 15-29 and 11-20; and 25 producing wells within one mile of a potential expansion of the existing SP 3-28 pad. Current surface disturbance is approximately 64 acres from existing pads

and approximately 47 acres from access roads, or approximately 111 acres. Total surface disturbance, including a 10-acre pad expansion, would be about 121 acres.

Approximately 48 acres of the existing pads have been reclaimed leaving a total of 16 acres of production disturbance footprints. The total surface disturbance from well pads and access roads after interim reclamation is approximately 63 acres within one mile of this alternative (Map 4.1-2). It is estimated that QEP would reclaim approximately 8 acres of the 10-acre expansion leaving a 2-acre production footprint. This would result in approximately 65 acres of production surface disturbance within one mile of this alternative.

None of the above effects described are beyond those analyzed in the PAPA ROD or those analyzed in the EAs for the existing SP 3-28 well pad and SP 2A-28D expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.1.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: Placing production facilities for the proposed SP 6D3-28 and 10B4-28 wells onto the existing SP 3-28 well pad would not eliminate the need for the proposed SP 7-28 well pad and access road and pipelines. In addition, a 100-foot by 100-foot work area (0.23 acres) would be necessary for the bore drill and equipment required to bore the pipeline through the hillside to the proposed SP 7-28 well pad. This would result in nearly 7.8 acres of new surface disturbance.

4.1.4.1 Direct/Indirect Effects: The direct and indirect effects to soil resources would be the same as those described for the proposed action, but would result in an additional loss of 0.23 acres (Sec. 4.1.1.1, Proposed Action).

4.1.4.2 Cumulative Effects: Placing production facilities on the existing SP 3-28 well pad would result in an approximate 0.14-acre decrease in the footprint of disturbance on the proposed SP 7-28 well pad after interim reclamation; however, it would result in an approximate 0.1-acre increase to the footprint of disturbance at the existing SP 3-28 well pad. An additional 0.23 acres of new surface disturbance would be required under this alternative.

The cumulative effects to soil resources would be greater than those described for the proposed action (Sec. 4.1.1.2, Proposed Action).

4.2 Vegetation Resources

4.2.1 Alternative I – Proposed Action: Potential effects to vegetation as a result of the proposed action would include the temporary removal of approximately 7.5 acres of native vegetation, primarily sagebrush and mid-stature bunchgrass, during the construction of the proposed pad, access road and pipeline.

4.2.1.1 Direct/Indirect Effects: The temporary loss of sagebrush, which may take 10 to 20 years to fully re-establish, would affect forage/browse vegetation. In addition, the temporary increase in bare ground would increase the potential for the invasion of non-native species, such as Russian thistle, cheatgrass, halogeton, and lambs quarter. The invasion of noxious weeds, such

as henbane, could establish in cleared, disturbed areas resulting in infestations that may limit the success of native species.

Potential sources of weed invasion would be vehicles, dormant seeds on the site, straw used for mulching, and commercial seeds used for interim reclamation that may not be totally weed free. Cattle, pronghorn, and mule deer may spread the seeds of invasive species when grazing on newly planted interim reclamation.

QEP would incorporate the same design features described in the proposed action to reduce effects to vegetation resources and control invasive non-native species and noxious weeds (Sec. 2.1.1.5.2, Proposed Action). In addition, planting native grasses and shrubs on all portions of the well pad, not needed for production purposes, as soon after drilling as possible, which would reduce the ability of non-native species to germinate and spread. QEP also proposed a weed monitoring and spray program to control weeds in accordance with guidelines established by the Environmental Protection Agency (EPA), BLM, state and local authorities.

4.2.1.2 Cumulative Effects: Approximately 61 acres (16 acres of operational well pads and 45 acres of access roads) within one-mile of the proposed action would remain for the expected life of the well and result in the temporary loss of forage/browse and the potential for the invasion of non-native species and noxious weeds in all of these areas (Map 4.1-1).

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which acknowledged that the removal of native vegetation as a result of gas development in the PAPA (Executive Summary, p. viii).

4.2.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 well pad, access road, and pipeline would not be constructed. Effects to vegetation resources would be the same as current management practices under the PAPA ROD. No vegetation resources would be affected under this alternative.

4.2.3 Alternative III - Drilling wells from existing pads: Expanding the existing SP 3-28 well pad to the southeast could result in as much as 10 acres of temporary vegetation loss.

4.2.3.1 Direct/Indirect Effects: In addition to the effects described in the proposed action (Sec. 4.1.3.1, Proposed Action), this alternative could result in as much as 2.5 additional acres of temporary vegetation loss.

4.2.3.2 Cumulative Effects: Total surface disturbance within one mile of this alternative, including a 10-acre pad expansion, would be about 121 acres. Approximately 48 acres of the existing pads have been reclaimed leaving a total of 16 acres of production disturbance footprints. The total surface disturbance from well pads and access roads after interim reclamation is approximately 63 acres within one mile of this alternative.

It is estimated that QEP would reclaim approximately 8 acres of the 10-acre expansion leaving a 2-acre production footprint. This would result in approximately 65 acres of production surface

disturbance within one mile of this alternative. The effects of this alternative would be the same as the proposed action (4.2.1.2, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, nor are they beyond the effects analyzed in the EAs for the existing SP 3-28 well pad and expansion (WY046-EA98-142, June 9, 1998 and the WY100-EA05-264, July 19, 2005).

4.2.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: As stated in the Sec. 4.1.4, placing production facilities from the proposed SP 7-28 well pad onto the existing SP 3-28 well pad would not eliminate the need for the proposed SP 7-28 well pad and proposed access road and pipelines. An additional 0.23 acres of new surface disturbance off the well pad would be required for the installation of pipeline bores resulting in the temporary loss of 7.8 acres of vegetation resources.

4.2.4.1 Direct/Indirect Effects: The direct and indirect effects to vegetation resources would be greater than described for the proposed action (Sec. 4.1.1.1, Proposed Action).

4.2.4.2 Cumulative Effects: Placing production facilities on the existing SP 3-28 well pad would result in a 0.14 reduction in the disturbance footprint on the SP 7-28 well pad and an increase in of approximately 0.1 acres of production footprint on the SP 3-28. This would result in approximately 2.1 acres of production footprint at the SP 7-28 and a 2.6-acre production footprint at the SP 3-28 well pad.

The cumulative effects to vegetation resources under this alternative would be greater than those described for the proposed action (Sec. 4.1.1.2, Proposed Action).

4.3 Wildlife Resources

4.3.1 Alternative I – Proposed Action: The proposed action is located within crucial winter range for mule deer and within delineated migration corridors to and from the Mesa and Ryegrass winter ranges (Map 4.3-1 and 4.3-2). In addition, it is located within a Greater sage-grouse winter concentration area, and within pygmy rabbit and raptor habitat.

4.3.1.1 Mule Deer/Pronghorn

4.3.1.1.1 Direct/Indirect Effects: The potential negative effects to mule deer as a result of the proposed action would be: 1) the temporary loss of 7.5 acres of forage and browse vegetation, and 2) the potential disruption of migration routes from high traffic volume, heavy earth-moving equipment, the drilling rig, excessive noise, and increased human presence.

A 2008 Western Ecosystems, Inc. study found that mule deer avoided well pads by up to 2.2 miles (Sawyer, Nielson, and Strickland 2008). Thus, mule deer would tend to avoid this area during the construction and drilling phase and move into areas of less suitable habitat occupied by other mule deer or pronghorn. In addition, the proposed action is located in a delineated mule deer and pronghorn migration corridor to and from the Ryegrass area and the Mesa area (Sawyer and Nielsen, 2011).

To mitigate the temporary loss of forage/browse, interim reclamation of approximately 5.3 acres of the well pad and access road would begin immediately after the wells are put into production. QEO would incorporate design features as described in vegetation resources to enhance the quick re-growth of vegetation in reclaimed areas (Sec. 2.1.1.5, Proposed Action). In addition, QEP proposes to meet with BLM to modify the seed mixture and other reclamation protocol as appropriate to reduce the effects to mule deer (MSUP, Item 10G). Modification could include the use of both seeding and container plantings in order to reduce the time necessary to establish desired browse species. This would result in faster reclamation recovery times.

The construction and drilling phase is expected to last approximately 80 days and is considered temporary. It would also be conducted during a period when there are no seasonal restrictions, in accordance by the PAPA ROD for delineation drilling in DA-1 of the CDA (Sec. 2.1.8.2, p. 9). As a result, the two delineation wells would be drilled when mule deer are largely absent from the area. In addition, seasonal stipulations have been placed on the drilling and construction of the proposed action to protect wintering mule deer. This would reduce but will not eliminate effects to mule deer.

4.3.1.1.2 Cumulative Effects: Within one mile of the proposed action, there would be 28 producing natural gas wells on eight well pads, including the proposed action. After interim reclamation of the proposed SP 7-28 well pad, this would result in a temporary loss of 61 acres of forage and browse vegetation.

Studies of the Sublette mule deer herd have shown that the mule deer populations have declined below the population threshold outlined in the Wildlife Monitoring and Mitigation Matrix (Sawyer and Nielson, January 20, 2011 and PAPA ROD, Appendix B). In response, the Pinedale Anticline Project Office (PAPO) mitigation team has undertaken a study to determine how to provide on-site mitigation measures to enhance browse and/or forage production and diversity for mule deer. Potential treatments may include chemical or mechanical treatments, prescribed burns, seeding and/or planting of seedlings and other mitigation measures.

None of the above effects to mule deer as a result of the proposed action are beyond the range of effects analyzed in the PAPA FSEIS, which states that big game would continue to be adversely affected by wellfield development (Executive Summary, p. ix).

4.3.1.2 Greater Sage-Grouse:

4.3.1.2.1 Direct/Indirect Effects: Construction, drilling and/or completion operations have been shown to result in adverse effects to sage-grouse. Noise, traffic and elimination of habitat all contribute to diminished effectiveness of habitats used by greater sage-grouse in winter and during courtship, nesting and brood rearing. Potential effects to occupied leks within one mile of a surface disturbing activity would be disrupted courtship displays and reduced breeding success. Potential impacts to occupied sage-grouse nests on or near the proposed action would result in nest abandonment and subsequent egg mortality.

A May 3, 2008, sage-grouse survey showed no direct evidence of sage-grouse nesting within one mile of the proposed action. The survey did identify one female sage-grouse within 300 feet of

the proposed action, several fresh foraging pellets, and a portion of a sage-grouse eggshell from the 2008 nesting season within the survey area. The presence of a shell fragment and female grouse in the area suggests sage-grouse nesting occurs in the area. The egg shell could, however, be the result of predatory activities. Based on the WGFD standards of 10-year occupancy no occupied leks are located within two miles of the proposed action. Therefore, based on guidelines set forth in the Pinedale Resource Management Plan 2008, no seasonal restrictions protecting sage-grouse nesting and brood rearing habitat have been placed on the proposed action.

The construction and drilling phase is expected to last approximately 80 days and is considered temporary. It would also be conducted during a period when there are no season restrictions, in accordance by the PAPA ROD for delineation drilling in DA-1 of the CDA (Sec. 2.1.8.2, p. 9). As a result, the two delineation wells would be drilled when wintering sage-grouse are largely absent from the area. In addition, seasonal stipulations have been placed on the drilling and construction of the proposed action to protect sage-grouse in winter concentration areas. This would reduce but will not eliminate effects to sage-grouse.

QEP utilizes a closed-loop system. Therefore, no reserve pits, which could act as a breeding ground for mosquitoes carrying West Nile disease, would be used.

4.3.1.2.2 Cumulative Effects: There would be 28 producing natural gas wells on eight well pads, including the proposed action within one mile of the proposed action. After interim reclamation of the proposed SP 7-28 well pad, this would result in a temporary loss of 61 acres of sagebrush vegetation and cover (Map 4.3-3). The continued loss of habitat function and fragmentation would result in declining sage-grouse breeding, nesting and brood-rearing.

None of the above effects to sage-grouse as a result of the proposed action are beyond the range of effects analyzed in the PAPA FSEIS, which states that decreased habitat function is expected at greater sage-grouse leks by surface disturbance and potential human presence within two miles of nesting and brood-rearing habitats (Executive Summary, p. ix). It further states that drilling and completion activities would increase noise from pre-development levels above 10dBA at noise-sensitive sites up to 2,800 feet away (Executive Summary, p. viii).

4.3.1.3 Raptors:
4.3.1.3.1 Direct/Indirect Effects: Potential effects to occupied raptor nests from February 1 through July 31, within 0.5 miles of the proposed construction would be nest abandonment and subsequent egg mortality. No active raptor nests were found during an April 18, 2008 survey by WWC. A pair of Swainson's hawks was observed at a nest along the Sill Ditch during the May 3, 2008 survey. The nest is located 0.5 miles east of the outer edge of the proposed well pad along the Sill Ditch at the edge of the 0.5-mile buffer of the proposed action. This nest location was also classified as active in 2010.

The construction and drilling phase is expected to last approximately 80 days and is considered temporary. It would also be conducted during a period when there are no season restrictions, in accordance by the PAPA ROD for delineation drilling in DA-1 of the CDA (Sec. 2.1.8.2, p. 9).

As a result, the two delineation wells would be drilled when nesting raptors are largely absent from the area. Seasonal stipulations have been placed on the drilling and construction of the proposed action to protect raptor nesting. This would reduce but will not eliminate effects to nesting raptors.

4.3.1.3.2 Cumulative Effects: The drilling of the two delineation wells on the SP 7-28 well pad would be the only construction activities within the 0.5-mile buffer of the raptor nest as all other delineation wells and associated well pads have been completed (Map 4-3-3).

None of the above effects to nesting raptors as a result of the proposed action are beyond the range of effects analyzed in the PAPA FSEIS, which states that decreased raptor nesting habitat effectiveness is likely within one mile of the New Fork River riparian zone (Executive Summary, p. ix).

4.3.1.4 Pygmy Rabbits:
4.3.1.4.1 Direct/Indirect Effects: Potential effects to pygmy rabbits close to or within the construction, drilling, and completion operations would be the destruction of burrows, loss and fragmentation of habitat, reduced cover and forage and displacement of pygmy rabbits to less suitable habitat, which could result in subsequent mortality.

WWC conducted two pygmy rabbit surveys within 0.25 miles of the proposed action. The October 18, 2007 survey identified 17 active pygmy rabbit burrow systems and 13 burrow systems with old pellets in every direction of the proposed well pad. No pygmy rabbits were observed during either of the surveys. An additional survey conducted on May 27, 2011, confirmed the presence of active burrows within 0.25 miles of the location. No pygmy sign was detected within the limits of the pad disturbance. The majority of evidence was found in the surrounding draws and adjacent hillsides. The current pad location would therefore result in minimal habitat fragmentation with no burrow destruction and associated displacement.

4.3.1.4.2 Cumulative Effects: As described above, there would be 28 producing natural gas wells on eight well pads, including the proposed action within one mile of the proposed action. After interim reclamation of the proposed SP 7-28 well pad, this would result in a temporary loss of 61 acres of sagebrush vegetation and cover. The continued loss of habitat function and fragmentation would result in declining pygmy rabbit populations.

None of the above effects to pygmy rabbits, as a result of the proposed action, are beyond the range of effects analyzed in the PAPA FSEIS, which states that diminished habitat function is expected to occur within some distance from surface disturbance (Sec. 4.19.3.1, p. 142).

4.3.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 well pad, access road and pipeline would not be constructed. Effects to wildlife resources would be the same as current management practices under the PAPA ROD.

4.3.3 Alternative III - Drilling wells from existing pads: Under this alternative, the proposed action would not be constructed and the delineation wells would be drilled from a 10-

acre expansion of the existing SP 3-28 well pad. Like the proposed action, this proposal would also be located within crucial winter range for mule deer and in identified migration corridors to and from the Mesa and Ryegrass winter range (Maps 4.3-1 and 4.3-2). In addition, it is located in sage-grouse winter concentration area and in pygmy rabbit habitat (Map 4.3-3).

4.3.3.1 Mule Deer:
4.3.3.1.1 Direct/Indirect Effects: The direct and indirect effects to mule deer are the same as those described in proposed action (Sec. 4.3.1.1.1, Proposed Action). Seasonal stipulations would be applied to protect wintering mule deer.

4.3.3.1.2 Cumulative Effects: There would be 27 producing wells drilled on eight well pads within one mile of a potential expansion of the existing SP 3-28 pad. After interim reclamation, the surface disturbance from well pads and access roads would be approximately 65 acres, including a 2-acre footprint of disturbance on the SP 3-28 pad. The cumulative effects of this alternative would be the same as the proposed action (4.2.1.2, Proposed Action).

None of the effects on mule deer are beyond the range of effects analyzed in the PAPA ROD (Executive Summary, p. viii) and EAs for the existing SP 3-28 pad and SP 2A-28D expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.3.3.2 Greater Sage-grouse:
4.3.3.2.1 Direct/Indirect Effects: No sage-grouse surveys have been conducted for this alternative. The direct and indirect effects to wintering sage-grouse are the same as those described in proposed action (Sec. 4.3.2.1.1, Proposed Action). Seasonal stipulations would be applied to protect wintering sage-grouse.

4.3.3.2.2 Cumulative Effects: There would be 27 producing wells drilled on eight well pads within one mile of a potential expansion of the existing SP 3-28 pad. After interim reclamation, the surface disturbance from well pads and access roads would be approximately 65 acres, including a 2-acre footprint of disturbance on the SP 3-28 pad. The cumulative effects of this alternative would be the same as the proposed action (4.3.2.1.2, Proposed Action).

None of the effects on sage-grouse are beyond the range of effects analyzed in the PAPA ROD (Executive Summary, p. viii) and EAs for the existing SP 3-28 pad and SP 2A-28D expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.3.3.3 Pygmy Rabbits:
4.3.3.3.1 Direct/Indirect Effects: No pygmy rabbit surveys have been conducted for this alternative. The direct and indirect effects to pygmy rabbits would be the same as those described in proposed action (Sec. 4.3.2.1.1, Proposed Action). In addition, the expansion would remove 10 acres of preferred habitat in the intermittent drainage. A pygmy rabbit survey would be required prior to approval of construction activities.

4.3.3.3.2 Cumulative Effects: The cumulative effects on pygmy rabbits from 27 producing wells drilled on eight well pads within one mile of a potential expansion of the existing SP 3-28

pad. After interim reclamation, the surface disturbance from well pads and access roads would be approximately 65 acres, including a 2-acre footprint of disturbance on the SP 3-28 pad. The cumulative effects of this alternative would be the same as the proposed action (Sec. 4.3.2.1.2, Proposed Action).

4.3.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: Placing production facilities from the proposed SP 7-28 pad onto the existing 3-28 pad would not eliminate the need for the proposed SP 7-28 pad, access road and pipeline. Even though the production facilities would no longer be located on the SP 7-28 well pad, a blow-down tank would still be required on the well pad for safety purposes.

4.3.4.1 Mule Deer:
4.3.4.1.1: Direct/Indirect Effects: In addition to the 7.5 acres of new surface disturbance associated with the drilling and construction of the two proposed delineation wells, an additional 100-foot by 100-foot work area would be needed to locate the bore drill and equipment. This would result in an additional temporary loss of 0.23 acres of forage and located within an identified mule deer migration corridor.

During the active drilling phase of the operation, the effects to mule deer would be similar to those described in the proposed action (Sec. 4.3.1.1, Proposed Action).

Methods to mitigate the formation of hydrates within the during cold weather, would increase potential impacts on migrating and wintering mule deer and pronghorn through increased traffic volume and increased human presence; increased noise, and increased emissions from traffic and the venting of the lines. QEP's experience at a similar well on the Mesa indicates that these methods require at least two truck visits to the site daily to check for hydrate formation and administer additional methanol. This is more than twice the daily visits to the site as would be required under the proposed action.

Reducing the production footprint of the SP 7-28 well pad by 0.14 acres would result in a 0.1-acre increase on the SP 3-28 production pad after interim reclamation. The 0.23-acre work area would be fully reclaimed.

If leaks were to occur in the pipeline, the 0.23-acre work area would be re-disturbed to replace the line. This could occur at times when wintering mule deer are present.

4.3.4.1.2 Cumulative Effects: The cumulative effects to mule deer under this alternative would be the greater than for the proposed action (Sec. 4.3.1.2, Proposed Action).

4.3.4.2 Greater Sage-Grouse:
4.3.4.2.1 Direct/Indirect Effects: The direct and indirect effects during the active drilling phase are the same as those for the proposed action (Sec. 4.3.1.2, Proposed Action). An additional temporary loss of 0.23 acres of forage and habitat would result during construction.

Increased traffic, human presence, noise, and emissions during the production phase would affect wintering sage-grouse in much the same way as described for mule deer (Sec. 4.3.3.1.1, Mule Deer). If leaks were to occur in the pipeline, the 0.23-acre work area would be re-disturbed to replace the line. Abandonment of the line and reboring the hillside to replace the line could could occur at times when wintering sage-grouse are present.

4.3.4.2.2 Cumulative Effects: The cumulative effects to wintering sage-grouse under this alternative would be the greater than those described for the proposed action (Sec. 4.3.1.2, Proposed Action).

4.3.4.3 Raptors:
4.3.4.3.1 Direct/Indirect Effects: The direct and indirect effects during the active drilling phase are the same as those for the proposed action (Sec. 4.3.1.2, Proposed Action). Increased traffic, human presence, noise, and emissions generated during the production phase would affect nesting raptors in much the same way as for the proposed action.

4.3.4.3.2 Cumulative Effects: The cumulative effects to nesting raptors under this alternative would be the greater than for the proposed action (Sec. 4.3.1.2, Proposed Action).

4.3.4.4 Pygmy Rabbits:
4.3.4.4.1 Direct/Indirect Effects: The direct and indirect effects during the active drilling phase are the same as those for the proposed action (Sec. 4.3.1.2, Proposed Action). Increased traffic, human presence, noise, and emissions would affect pygmy rabbits in much the same way as for the proposed action.

4.3.4.4.2 Cumulative Effects: The cumulative effects to pygmy rabbits under this alternative would be the greater than for the proposed action (Sec. 4.3.1.2, Proposed Action).

4.4 Cultural Resources

Significant impacts to cultural resources are defined as effects that diminish the integrity of an historic property such that it can no longer be listed on, or considered eligible for listing on the National Register. This is considered to be an adverse effect. The criteria of integrity that may be important to an historic property are: location, design, material, workmanship, setting, feeling, and association. Potential changes to the integrity of an historic property may be mitigated through the application of standard mitigation techniques, including, but not limited to: data recovery excavation, construction monitoring or the implementation of a VRPP. The type of mitigations utilized depends on the type of historic property in the area, the relevant aspects of integrity and the expected effects of the project.

4.4.1 Alternative I – Proposed Action:

4.4.1.1 Direct/Indirect Effects: One historic property, 48SU3193, will be directly impacted by the proposed action. This site is considered eligible under Criterion D for the potentially significant information the site may contain. Extensive archaeological testing conducted at 48SU3193 determined that the portion of the site that will be affected by the proposed project is not a significant part of the site and does not contribute to the National Register eligibility. The

Wyoming State Historic Preservation Office (WySHPO) has concurred that any potential adverse effects to site 48SU3193 as a result of the proposed action will be mitigated through the implementation of a discovery plan in accordance with the Wyoming State Protocol. Tribal consultation indicates that implementation of a discovery plan at 48SU3193 with a construction monitor in place during the initial soil-stripping phase of construction is sufficient to mitigate any adverse effects.

The proposed action is located more than one mile from the 48SU2019, as requested during tribal consultation. This site is eligible for the National Register for the potentially important information the site may contain and this site is considered a sacred site (according to Executive Order 13007) as requested by the Eastern Shoshone Tribe. The location of this alternative would neither directly, nor indirectly affect any aspect of integrity significant to 48SU2019, nor will this alternative increase access to, or human presence within the area of the sacred site that could result in adverse cumulative impacts such as increased potential for looting or vandalism. The location of this alternative will not adversely affect the physical integrity of the site, nor will it prevent use of the site by tribal members or religious practitioners. Visual contrast ratings conducted for this site according to the Wyoming Protocol have determined that this alternative will have a weak contrast on the landscape and will not adversely affect the setting of the site. Specific details about the nature and location of this site are not included in this document and are not available for public disclosure in conformance with 43 CFR 7.18.

4.4.1.2 Cumulative Effects: In the PAPA, surface disturbance is the major factor determining adverse effects for cultural and historic resources.

Tribal consultation confirms that relocation of the pad to the currently proposed location, more than one mile from the site, and implementation of the Revised VRPP would be sufficient to protect the site from adverse effects. As a recognized sacred site, the BLM will ensure that tribes continue to have access to the site and that the site is not physically damaged. The BLM will continue consultation with the tribes regarding use and management of this site and any future proposed projects in the vicinity.

None of the above effects to cultural resources are beyond the range of effects analyzed in the PAPA FSEIS, which states that destruction and/or unexpected discoveries of archaeological resources are expected consequences of new surface disturbance (Executive Summary, p. vii).

4.4.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 pad, access road and pipeline would not be constructed. The no action alternative would have no ground disturbing component and have no potential to adversely affect cultural resources.

4.4.3 Alternative III - Drilling wells from existing pads: A 40-acre Class III block survey was undertaken for the SP 2A-28D expansion to the existing SP 3-28 pad. No cultural material was found during the survey (WY046-05-230).

4.4.3.1 Direct/Indirect Effects: The effects would be the same as for the proposed action (Sec. 4.4.1.1, Proposed Action).

4.4.3.2 Cumulative Effects: The effects would be the same as for the proposed action (Sec. 4.4.1.2, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA ROD, and the EAs for the existing SP 3-28 (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.4.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: A 40-acre Class III block survey was undertaken for the SP 2A-28D expansion to the existing SP 3-28 pad. No cultural material was found during the survey (WY046-05-230).

4.4.4.1 Direct/Indirect Effects: The effects would be the same as for the SP 2A-28D expansion authorized under WY100-EA-05-264, July 19, 2005.

4.4.4.2 Cumulative Effects: The effects would be the same as for the SP 2A-28D expansion authorized WY100-EA-05-264, July 19, 2005.

4.5 Visual Resource Management

4.5.1 Alternative I – Proposed Action: The proposed action would be located in an area designated as VRM Class II and III and visible from Hwy 191, just south of the town of Pinedale, subdivisions and ranches along Hwy 191, Ruby Hill, and the New Fork River. QEP submitted their revised VRPP on May 23, 2011, which used two KOPs for photo simulations: the Bridle Bit KOP, located on Hwy 191 and Bridle Bit Lane, and the top of Ruby Hill, a representative landscape in the Stewart Point area. BLM and QEP determined that a KOP from the town of Pinedale would not be appropriate because of the distance of the proposed action from the town.

4.5.1.1 Direct/Indirect Effects: Direct effects of the proposed action would be visible primarily during the construction and drilling phase of the project. Because of its height, lights and coloration, the drill rig would be visible from the Bridle Bit KOP. View distances would help reduce the visibility of the rig and construction equipment. The surrounding ridgelines would provide a background that would eliminate the possibility of sky lining effects from the earthwork, production and storage facilities. On March 19, 2009, BLM and QEP agreed that photo simulations of the pad with a drill rig would not be included in the revised VRPP because the development phase effects would be considered temporary or short-term (Revised VRPP, May 23, 2011, p. 6). No long-term visual effects are anticipated for the presence of the drill rig.

It was determined in the Revised VRPP, accepted by BLM on June 2, 2011, that the proposed action as mitigated, would conform to the BLM's VRM Class II and III objectives from the KOPs, be subordinate to other features in the landscape, and not draw the attention of a casual observer in the vicinity of the proposed action (Revised VRPP, May 23, 2011, p. 15-16).

4.5.1. Cumulative Effects: In addition to the proposed action, there are seven active pads and 26 producing wells within one mile of the proposed action. VRPPs have been completed for the SP 3-28 well pad expansion (August 5, 2005), the SP 1-29 well pad (July 14, 2009), and the SP

14-20 well pad expansion (May 19, 2009). The effects and mitigation measures implemented for these delineation pads have reduced the impacts to visual resources of production activities on these well pads.

If the delineation wells are productive, it is anticipated that the proposed action and the above well pads would be expanded to allow the drilling of multiple directional production wells in the future. The proposed well pad, access road, and facilities would be the first to be located within this basin's viewshed. Future pad expansions would likely generate visual effects not in accordance with the area's VRM Class II objectives.

None of the above effects are beyond the range of effects analyzed in the PAPA ROD, which states that substantial portions of land in the VRM Class III would be affected, primarily in the northern end of the PAPA and along the New Fork River (Executive Summary, p. vii).

4.5.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 pad, access road and pipeline would not be constructed. Effects to visual resources would be the same as current management practices under the PAPA ROD.

4.5.3 Alternative III - Drilling wells from existing pads: Expanding the existing SP 3-28 pad to the southeast would place the pad expansion on a rise between two small unnamed drainages in an area of steeper slopes in VRM Class III.

4.5.3.1 Direct/Indirect Effects: A VRPP was conducted for the existing SP 3-28 well pad expansion on August 5, 2005. KOPs used for photo simulations were located at the 95, 95.25, 95.5 and 96 mile-post markers on Hwy 191. Several locations for the first expansion were considered in locating this well. The site was located in a bowl and screened by surrounding hillsides. It was chosen because it had the smallest sight picture from the KOP (VRPP, August 5, 2005, p. 1). Visual impacts were further reduced by constructing the pad as small and linear as safely possible.

Under this alternative, approximately 10 acres of new surface disturbance would occur in an area of higher visibility and would require a new VRPP prior to approval of the APDs.

4.5.3.2 Cumulative Effects: Cumulative effects would be similar to those described in the proposed action (Sec. 4.5.1.2, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA ROD, the EAs for the existing SP 3-28 pad and expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.5.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: Placing production facilities from the proposed SP 7-28 pad onto the existing SP 3-28 well pad would not eliminate the need for the proposed SP 7-28 well pad, proposed access road and pipeline. Even though production facilities would be located on the existing SP 3-28 well pad, a blow-down tank would still be necessary on the SP 7-28 well pad for safety reasons.

4.5.4.1 Direct/Indirect Effects: Placing production facilities on the SP 3-28 well pad would result in a 0.14-acre decrease of the footprint of disturbance on the proposed SP 7-28 pad after interim reclamation. However, it would result in a corresponding 0.1-acres increase in the footprint of disturbance at the existing SP 3-28 pad, which is located in VRM III. In addition, 0.23 acres of new surface disturbance for a work area would be necessary off of the SP 3-28 well pad.

Methods for mitigating hydrate formation would result in more than twice the vehicular traffic to the well pad to check for hydration and administer methanol. If hydrates were to form in the pipeline. If a leak were to occur in the pipeline, it would have to be replaced causing additional construction related effects, most likely during cold weather months.

The direct and indirect effects to visual resources would be greater than those described for the proposed action (Sec. 4.5.1.1, Proposed Action).

4.5.4.2 Cumulative Effects: The cumulative effects to visual resources would be greater than those described for the proposed action (Sec. 4.5.1.2, Proposed Action).

4.6 Recreation Resources

4.6.1 Alternative I – Proposed Action:

4.6.1.1 Direct/Indirect Effects: Construction, drilling, and well completion coinciding with dispersed recreational activities, such as hunting, sightseeing, fishing, horseback riding, would affect the visual and aesthetic experience of individuals engaged in these activities by increasing traffic, producing noise and dust and by adding production facilities and other disturbances to the landscape which would cause a loss of open space and solitude. Hunters may find it unsafe to use some areas because of the construction activity. It has been shown that big game and sage-grouse would avoid areas where drilling and construction activities are actively occurring (Sec. 4.3.1.1, Wildlife Resources).

People fishing or floating on the New Fork River may be discouraged by project activities that are audible or within sight of their recreational experience. The improved road may contribute to area use by recreational ORV enthusiasts interested in off-road driving and increased potential for effects to vegetation and soil.

Indirect effects would included increased traffic and human presence in this undeveloped area, thus reducing the landscape's capacity to provide a semi-primitive recreational experience.

4.6.1.2 Cumulative Effects: There are seven active pads and 26 producing wells within one mile of the proposed action. QEP has proposed mitigation measures to reduce visibility of well pads, access roads and production facilities (Sec. 2.1.1.5.3, Visual Resources). In addition, mitigation measures identified in the PAPA FSEIS would help reduce adverse affects to reduce the area's scenic values (Sec. 4.6.5, Recreation Resources Additional Mitigation Opportunities, p. 4-58).

None of the effects to recreation resources is beyond those analyzed in the PAPA FSEIS, which states that effects to recreation resources would include increased traffic and human presence,

increased noise, and changes to the visual landscape, making it a less desirable place to recreate (Executive Summary, p. vii).

4.6.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 well pad, access road and pipeline would not be constructed. Effects to recreation would be the same as current management practices under the PAPA ROD 2008.

4.6.3 Alternative III - Drilling wells from existing pads:
4.6.3.1 Direct/Indirect Effects: The effects to recreation resources would be the same as for the proposed action (Sec. 4.6.1.1, Proposed Action).

4.6.3.2 Cumulative Effects: The effects to recreation resources would be the same as for the proposed action (Sec. 4.6.1.2, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA ROD and the EAs for the existing SP 3-28 pad and expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.6.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad:
4.6.4.1 Direct/Indirect Effects: The effects to recreation resources would be greater than those for the proposed action (Sec. 4.6.1.1, Proposed Action) because of increased traffic, human presence, noise and emissions during cold weather in an identified migration route for mule deer and pronghorn and in a sage-grouse concentration area..

4.6.4.2 Cumulative Effects: The effects to recreation resources would be greater than those for the proposed action (Sec. 4.6.1.2, Proposed Action) because of increased traffic, human presence, noise and emissions during cold weather.

4.7 Livestock Grazing

4.7.1 Alternative I - Proposed Action: The proposed action would result in the temporary loss of approximately 7.5 acres of forage in the 9,732-acre Mt. Airy Common Allotment, which is used for cattle grazing from May 16 through June 25. There are 9,732 public acres and 7 private acres within this allotment. The approximately 7.5 acres of new surface disturbance would result in the temporary loss of approximately 0.5 AUMs. After reclamation, approximately 2.2 acres (0.2 AUMs) would remain out of livestock forage production for the life of the wells, expected to be 20 to 30 years.

As the proposed action would have only a fully fenced cuttings pit and no reserve pit, incidents of livestock health and safety conflicts on location would be limited.

4.7.1.1 Direct/Indirect Effects: Active construction, drilling, and production during cattle turn-out period for this area from May 16 to June 25, could result in conflicts between industrial activity and livestock operations, such as: vehicular collisions, cattle interference with facility maintenance, reclamation success and interruption of cattle trailing logistics. These conflicts could result in over-grazing if the project implementation results in improper grazing

distribution. In the short-term, the overall loss of forage may increase stress upon the vegetative resource as the same number of cattle vie for a smaller amount of forage.

4.7.1.2 Cumulative Effects: There are 33 active well pads in the Mt. Airy grazing allotment or approximately 256 acres of surface disturbance. Including the proposed action, the total surface disturbance would be approximately 263 acres. Surface disturbance associated with approximately 81 miles of roads used for gas operations would add approximately 300 acres of surface disturbance. This would result in a total loss of approximately 563 acres or 6 percent of the total acreage of 9,732 acres in the allotment; a loss of 44 AUMs, not including the proposed action. The proposed action would result in the addition of 7.5 acres of surface disturbance or the temporary loss of an additional 0.5 AUMs.

Approximately 166 acres on 30 of the 33 well pads have been reclaimed leaving approximately 90 acres of working pads within the grazing allotment or a temporary loss of approximately 7 AUMs. The total surface disturbance within the allotment after reclamation is approximately 300 acres or a temporary loss of 30 AUMs. An additional 4 acres of reclamation would result in approximately 552 acres of surface disturbance remaining.

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which states that the loss of livestock grazing capacity (in AUMs) by removal of existing native vegetation in the PAPA is expected in some grazing allotments (Executive Summary, p. viii).

4.7.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 pad, access road and pipeline would not be constructed. Effects to grazing resources would be the same as current management practices under the PAPA ROD.

4.7.3 Alternative III - Drilling wells from existing pads: This alternative could result in the loss of as much as 10 acres of forage, or about 0.8 AUMs.

4.7.3.1 Direct/Indirect Effects: Effects to grazing resources would be the same as those described in the proposed action (Sec. 4.7.1.1, Proposed Action).

4.7.3.2 Cumulative Effects: Effects to grazing resources would be the same as those described in the proposed action (Sec. 4.7.1.2, Proposed Action).
None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, nor are they beyond the effects analyzed in the EAs for the existing SP 3-28 pad and expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005.

4.7.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: Placing production facilities from the proposed SP 7-28 pad onto the existing 3-28 pad would not eliminate the need for the proposed SP 7-28 pad and proposed access road and pipeline.

4.7.4.1 Direct/Indirect Effects: The direct and indirect effects to grazing resources would be greater than those described for the proposed action (Sec. 4.7.1.1, Proposed Action). An additional temporary loss of 0.23 acres of forage would occur under this alternative (0.02

AUMs). Increased noise, vehicular traffic in cold weather, human presence, and emissions would result from this alternative.

4.7.4.2 Cumulative Effects: The cumulative effects to grazing resources would be greater than for the proposed action (Sec. 4.7.1.2, Proposed Action).

4.8 Water Resources

4.8.1 Alternative I - Proposed Action:

4.8.1.1 Direct/Indirect Effects: Increased erosion from construction related runoff and accidental spills of produced water and condensate from the two delineation wells could affect the small wetland and small intermittent drainage to the south of the proposed action. In accordance with the Pinedale RMP and PAPA ROD, the proposed action is located outside the 500-foot buffer for wetlands (p. 2-42 and Appendix 3, p. A3-19 respectively).

Windblown dust, increased sediment from runoff off of the proposed well pad and accidental spills could also affect the Sill Ditch, which joins the New Fork River, located approximately 0.5 miles east of the proposed action.

A BMP of zero net sediment discharge is proposed to prevent the movement of sediment off site and subsequently into adjacent drainage ways. In addition, QEP would incorporate erosion and drainage controls and timely interim reclamation to prevent erosion during the construction phase and minimize runoff from the proposed pad and access road (Sec. 2.1.1.5.1, Proposed Action).

Contamination by the drilling and fracturing of natural gas wells that have not been properly cemented in the water-bearing zones could contaminate fresh water aquifers used as a potable drinking water supply. The nearest water well used for stock or domestic purposes is located approximately 1.2 miles from the proposed action. Because the domestic well is in the shallow alluvium of the New Fork River, it is unlikely that it would be affected by the drilling of the proposed wells.

4.8.1.2 Cumulative Effects: There are approximately 61 acres (15 acres of operational well pad disturbance and 46 acres of access roads) within one mile of the proposed action that will bare for the productive life of the wells. All of the well pads and access roads are located outside the 500-foot buffer in accordance with the Pinedale RMP and PAPA ROD (p. 2-42 and Appendix 3, p. A3-19 respectively). In addition, QEP has incorporated erosion and drainage controls during the construction phase of the projects to minimize runoff and wind erosion from construction and operation during production (Sec. 2.1.1.5.1, Proposed Action).

None of the effects are beyond those analyzed in the PAPA FSEIS, which states that annual sediment yields could increase substantially above current conditions and the water quality could be affected by increased drilling (Executive Summary, p.viii).

Of the three water wells within one mile of the proposed action, all are permitted for miscellaneous industrial use and were drilled to provide water for drilling purposes. Standards

for sound gas well construction and the reuse of drilling water have reduced the potential for contamination and lowering of the water level within the aquifers.

None of the above effects are beyond the range of effects analyzed in the PAPA ROD, which states that the use of water supply wells would lead to the temporarily drawdown of groundwater in the Wasatch aquifers. Potential contamination of shallow aquifers would result from accidental spills and cross-aquifer mixing (Executive Summary, p. viii).

4.8.2 Alternative II - No Action: Under the No Action alternative, the proposed SP 7-28 pad, access road and pipeline would not be constructed. Effects to surface and groundwater resources would be the same as current management practices under the PAPA ROD.

4.8.3 Alternative III - Drilling wells from existing pads: Expanding the existing SP 3-28 pad to the southeast would result in as much as 10 acres of surface disturbance on a slight rise between two small unnamed drainages in an area of 13 to 15 percent slopes.

4.9.3.1 Direct/Indirect Effects: The effects to surface drainages and wetlands would be the same as for those analyzed in the proposed action (Sec. 4.8.1.1, Proposed Action). In accordance with the Pinedale RMP, the expansion would be located approximately 180 feet from channel of the small drainage to the south, which would be more than 100 feet from the edge of the inner gorge of an intermittent drainage (p. 2-43, item c).

The direct and indirect effects groundwater resources would be the same as those described for the proposed action (Sec. 4.8.1.1, Proposed Action).

4.8.3.2 Cumulative Effects: Cumulative effects to surface water resources would be the same as those described for the proposed action (Sec. 4.8.1.2, Proposed Action).

The direct and indirect effects groundwater resources would be the same as those described for the proposed action (Sec. 4.8.1.2, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA ROD, and the EAs for the existing SP 3-28 pad and expansion (WY046-EA98-142, June 9, 1998 and WY100-EA05-264, July 19, 2005).

4.8.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: Placing production facilities from the proposed SP 7-28 well pad onto the existing SP 3-28 well pad would not eliminate the need for the proposed SP 7-28 well pad and proposed access road and pipelines.

4.8.4.1 Direct/Indirect Effects: The cumulative effects to surface and groundwater resources would be the same as for the proposed action (Sec. 4.8.1.1, Proposed Action).

4.8.4.2 Cumulative Effects: The cumulative effects to water resources would be the same as for the proposed action (Sec. 4.8.1.2, Proposed Action).

4.9 Residences

4.9.1 Alternative I - Proposed Action:

4.9.1.1 Direct/Indirect Effects: The proposed action is located approximately 4 miles from the town of Pinedale and approximately 1.2 miles from the nearest residence. Direct and indirect effects of the drilling and construction of two natural gas wells would include both a visual and noise component and could affect the aesthetic quality of life that nearby residents may currently experience. Noise would be generated from traffic, drilling equipment, flaring, production equipment, maintenance activities, and compression. Noise studies in the PAPA indicate that drilling noise may attenuate to 49 decibels (approximately 10 dBA above ambient levels) within 0.5 miles of the source (PAPA FSEIS, Sec. 4.10.3.1). Well pad and access road construction and well drilling is expected to take approximately 80 days and considered temporary and short-term.

Implementation of mitigation measures in the Revised VRPP (May 23, 2011, p. 2-3) and timely interim reclamation would reduce visual effects to residents. In addition, the proposed action would be located more than 0.25 miles from a dwelling or residence.

4.9.1.2 Cumulative Effects: Ongoing operation and maintenance have been a part of the project area since at least 1998 with the drilling of the existing SP 3-28 well. Since that time, more than 26 wells have been drilled from seven pads and put into production within one mile of the proposed action. All are visible from Hwy 191, just south of the town of Pinedale, subdivisions along Hwy 191 and/or ranches along the New Fork River. The production facilities that exist on these pads are also visible by drivers along Hwy 191, just south of the town of Pinedale, and subdivisions along Hwy 191. The effects of the addition of two delineation wells and the associated production facilities from the proposed SP 7-28 well pad would be similar to those created by previous activities.

In addition to the effects of natural gas drilling in Stewart Point, these same residents have experienced increased industrialization along Hwy 191 with the addition of the Sublette County shop and garage, the Weed and Pest Control Office, the airport and the airport industrial site. The proposed QEP offices and garage are being constructed along this section of Hwy 191.

Mitigation measures that QEP has proposed in its Revised VRPP, May 23, 23, 2011, would reduce visual effects of well drilling and production to residents (Sec. 2.1.4.1, Proposed Action).

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which analyzed the cumulative effects of surface disturbance from well drilling and residential development (Sec. 4.5-4, p. 4-53). The PAPA FSEIS further states that drilling and completion would increase noise from pre-development levels above 10 dBA up to 2,800 feet away (Executive Summary, p. viii).

4.9.2 Alternative II - No Action: Under the No Action alternative, the SP 7-28 pad, access road and pipeline would not be constructed. Effects to residents would be the same as current management practices under the PAPA ROD.

4.9.3 Alternative III - Drilling wells from existing pads: Expanding to the southeast of the existing SP 3-28 well pad would place the pad expansion on a slight rise between two small unnamed drainages in an area of steeper slopes, which would make it potentially more visible to the residents of the town of Pinedale, ranches along the New Fork River, drivers along Hwy 191, and residents of subdivisions along Hwy 191.

4.9.3.1 Direct/Indirect Effects: The direct effects to residences would be the same as the proposed action (Sec. 4.9.1.1, Proposed Action), but an expansion of as much as 10 acres may require a new or revised VRPP.

4.9.3.2 Cumulative Effects: The direct effects to residences would be the same as the proposed action (Sec. 4.9.1.1, Proposed Action), but an expansion of as much as 10 acres may require a new or revised VRPP.

4.9.4 Alternative IV - Co-locating production facilities on the SP 3-28 well pad: This alternative would result in a 0.14-acre decrease of the footprint of disturbance on the proposed SP 7-28 well pad after interim reclamation, but a corresponding 0.1-acre increase in the footprint of disturbance at the existing SP 3-28 well pad. Methods for mitigating hydrate formation would result in more than twice the vehicular traffic to the well pad to check for hydration and administer methanol. If hydrates were to form in the pipeline, QEP would have to vent gas to the atmosphere releasing unwanted VOCs during winter ozone season. If a leak were to occur in the pipeline, it would have to be replaced causing additional construction related effects.

4.9.4.1 Direct/Indirect Effects: The direct effects to residences would be greater than those described in the proposed action (Sec. 4.10.1.1, Proposed Action).

4.9.4.2 Cumulative Effects: The cumulative effects to residences would be greater for the proposed action (Sec. 4.10.1.2, Proposed Action).

4.10 Air Quality

4.10.1 Alternative I - Proposed Action:

4.10.1.1 Direct/Indirect Effects: Air quality impacts from the proposed action would occur from pollutants emitted during construction. These would include exhaust from earthmoving equipment, drilling and completion rigs, production equipment and compressors, fugitive dust from vehicular traffic and construction of well pads, access roads and pipelines and gas emissions from the well bore during and after drilling. Pollutants from these activities include NO_x, CO, SO_2, PM_{10}, $PM_{2.5}$ and VOCs and HAPs. Ozone may develop from Nitrogen Oxide (NO_x) and Volatile Organic Compounds (VOC) emissions. The construction and drilling phase is expected to take 80 days to complete and would be temporary.

QEP would incorporate mitigation measures, such as using a drilling rig with Tier II engines, control fugitive dust, use a closed-loop system instead of reserve pits, gather well fluids in their LGS, which would reduce traffic, and timely reclaim all unused portion of the well pad and access road to reduce soil erosion and reduce emissions.

4.10.1.2 Cumulative Effects: The decrease in actual emissions is a result of a slower pace of drilling than what was originally analyzed, the PAPA operators' liquid gathering system (LGS) which reduces emissions from facilities and substantially reduces truck traffic; cleaner rigs and better drilling technology. The air quality modeling completed for the PAPA FSEIS shows that cumulative effects from existing and proposed development, in conjunction with background emission sources and other oil and gas development and production projects in the PFO area and elsewhere in southwestern Wyoming, for PM10, PM2.5, NO_2 and SO_2 will not exceed the National Ambient Air Quality and Wyoming Ambient Air Quality Standards (NAAQS/WAAQS) or the Prevention of Significant Deterioration (PSD) Class I or Class II increments.

BLM, consistent with its Letter of Agreement for tracking nitrogen oxide emissions with the Wyoming DEQ dated June 20, 1997, and in cooperation and consultation with Wyoming DEQ, EPA Region VIII, USDA-Forest Service, and other affected agencies, will continue to track changes in total NO_x emissions from sources (new, abandoned, or modified) within the airshed of the BLM Pinedale Field Office. This tracking will continue until the state of Wyoming's review of its State Implementation Plan (SIP) for Visibility Protection, the Southwest Wyoming Technical Air Forum, or other information source, provide recommendations, with supporting technical analysis regarding regional visibility impacts, that the "level of concern" for NO_x emissions should be revised or eliminated.

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which states that air-quality impacts are anticipated (Executive Summary, p. viii).

4.10.2 Alternative II - No Action: Under the No Action alternative, the SP 7-28 well pad, access road and pipeline would not be constructed. Effects to air quality would be the same as current management practices under the PAPA ROD.

4.10.3 Alternative III - Drilling wells from existing pads: The drilling of the two delineation wells would still occur, only located at the existing SP 3-28 well pad.

4.10.3.1 Direct/Indirect Effects: The direct effects to air quality would be the same as the proposed action (Sec. 4.10.1.1, Proposed Action).

4.10.3.2 Cumulative Effects: The cumulative effects to air quality would be the same as the proposed action (Sec. 4.10.1.2, Proposed Action).

4.10.4. Alternative IV - Co-locating production facilities on the SP 3-28 well pad: The drilling of the two delineation wells would still occur under this alternative. Methods for mitigating hydrate formation would result in more than twice the vehicular traffic to the well pad to check for hydration and administer methanol. If hydrates were to form in the pipeline, QEP would have to vent gas to the atmosphere releasing unwanted VOCs during winter ozone season. If a leak were to occur in the pipeline, it would have to be replaced causing additional construction related effects.

4.10.4.1 Direct/Indirect Effects: The direct effects to air quality would be greater than for the proposed action (Sec. 4.10.1.1, Proposed Action).

4.10.4.2 Cumulative Effects: The cumulative effects to air quality would be greater than for the the proposed action (Sec. 4.10.1.2, Proposed Action).

4.11 Global Climate Change

4.11.1 Alternative I – Proposed Action: The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net effects from the proposed action on climate. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future effects of decisions made at this level. When further information on the effects to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

4.11.1.1 Direct/Indirect Effects: GHGs would be emitted during the construction and drilling phase, which is expected to last approximately 80 days; and throughout the life of the wells from production facilities, traffic, and occasional flaring. It is still unknown what the net direct or indirect effects the proposed action would have on climate (Pinedale RMP, Sec. 4.19-3, p. 279). QEP would incorporate mitigation measures, such as using a drilling rig with Tier II engines, control fugitive dust, use a closed-loop system instead of reserve pits, gather well fluids in their LGS, to reduce traffic to and from the production pad and timely reclaim all unused portion of the well pad and access road to reduce soil erosion to reduce emissions.

4.11.1.2 Cumulative Effects: There are seven active well pads and 26 producing gas wells within one mile of the proposed action. As of 2008, there are over 33,000 active gas and oil wells in the state of Wyoming, 45 operational gas processing plants, 5 oil refineries, and over 9,000 miles of gas pipelines. There are significant uncertainties associated with estimates of Wyoming's GHG emissions from this sector. This is compounded by the fact that there are no regulatory requirements to track CO_2 or CH_4 emissions. Therefore, estimates based on GHG emissions from the proposed action measurements in Wyoming are not possible at this time (Sec. 4.2.1.2, EA, 2011, p. 89).

None of the above effects are beyond the range of effects analyzed in the PAPA FSEIS, which states that air-quality impacts are anticipated (Executive Summary, p. viii).

4.11.2 Alternative II – No Action: Under this alternative, there would be no additional effects to global climate change.

4.11.3 Alternative III - Drilling wells from existing pads: The drilling of the two delineation wells would still occur.

4.11.3.1 Direct/Indirect Effects: The direct and indirect effects on global climate change would be the same as for the proposed action (Sec. 4.11.1.1, Proposed Action).

4.11.3.2 Cumulative Effects: The cumulative effects on global climate change would be the same as for the proposed action (Sec. 4.11.1.2, Proposed Action).

4.11.4. Alternative IV - Co-locating production facilities on the SP 3-28 well pad: The drilling of the two delineation wells would still occur. Methods for mitigating hydrate formation would result in more than twice the vehicular traffic to the well pad to check for hydration and administer methanol. If hydrates were to form in the pipeline, QEP would have to vent gas to the atmosphere releasing unwanted VOCs during winter ozone season. If a leak were to occur in the pipeline, it would have to be replaced causing additional construction related effects.

4.11.4.1 Direct/Indirect Effects: The direct and indirect effects on global climate change could be greater than for the proposed action (Sec. 4.11.1.1, Proposed Action) because of increased emissions from increased traffic and venting if hydrates form in the line.

4.11.4.2 Cumulative Effects: The direct and indirect effects on global climate change could be greater than for the proposed action (Sec. 4.11.1.2, Proposed Action).

4.12 Hazardous Materials

4.12.1 Alternative I - Proposed Action:

4.12.1.1 Direct/Indirect Effects: Effects from hazardous materials could result from accidental spills, pipeline ruptures and/or exposure to hazardous materials, but events would be localized. QEP or any contractor company working for QEP would have Material Data Safety Sheets (MSDS) available for all chemicals, compounds, or substances that are used during the course of drilling, completion, and production operations of this proposed project. All chemicals would be handled in an appropriate manner to minimize the potential for leaks or spills to the environment.

4.12.1.2 Cumulative Effects: Cumulative impacts from the proposed action are not expected to be significant unless there is a spill. A contingency plan for managing accidental releases, spills, and fires involving hazardous materials would be handled according to the operator's Spill Prevention Control and Countermeasure Plan (SPCCP) and the operator would abide by all applicable federal, state, and local laws or regulations.

4.12.2 Alternative II - No Action: Under the No Action alternative, the SP 7-28 pad, access road and pipeline would not be constructed. Effects of hazardous materials would be the same as current management practices under the PAPA ROD 2008.

4.12.3 Alternative III - Drilling wells from existing pads: The drilling of the two delineation wells would still occur. The direct and cumulative effects of hazardous materials would be the same as the proposed action (Sec. 4.13.1.1 and 4.13.1.2, Proposed Action).

4.12.4. Alternative IV - Co-locating production facilities on SP 3-28 well pad: The drilling of the two delineation wells would still occur. The direct and cumulative effects of hazardous materials would be the same as the proposed action (Sec. 4.13.1.1 and 4.13.1.2 Proposed Action).

Description of Mitigation Measures for Alternative I - Proposed Action: See Appendix I for the mitigation measures associated with the proposed action.

Description of Mitigation Measures for Alternative II - No Action: Under this alternative, the APDs would be denied and the lessee would be deprived of the opportunity to develop the 2 natural gas delineation wells under the proposed action. If the APDs are denied, all the environmental effects associated with the drilling, construction, and long-term production of the proposed actions would not occur.

However, because the delineation wells are necessary for the determination of the economic extent of the gas field, delineation wells would likely be drilled from another location which could result in just as, or more significant than, those analyzed in this EA. In addition, denying the APDs would limit QEP's opportunity to determine the boundaries of the field and develop its valid federal lease (WYW08592).

Description of Mitigation Measures for Alternative III - Drilling wells from existing pads: Conditions of Approval would be the same as for the proposed action, with the exception of stipulations relating to nesting raptors.

Description of Mitigation Measures for Alternative IV - Co-locating production facilities on SP 3-28 pad: Conditions of Approval would be the same as for the proposed action. COAs would be dependent upon the

Tribes, Individuals, Organizations or Agencies Consulted:
Tribes:

- Eastern Shoshone Tribe
- Northern Arapaho Tribe
- Uinta-Ouray Ute Tribe

Federal Agencies:

- Pinedale Anticline Project Office

State Agencies:

- State of Wyoming, Governor's Office
- Wyoming Game and Fish

Preparers:

- Janet Bellis Natural Resource Specialist
- Josh Hemenway Wildlife Biologist
- David Crowley Archaeologist
- Summer Schulz Range Specialist
- Martin Hudson VRM/Recreation Specialist

Reviewers:

- Tim Zebulske Supervisory Natural Resource Specialist
- Dave Crowley Archaeologist
- Greg Noble Assistant Field Manager, Minerals and Lands
- Shane DeForest Field Manager
- John Huston Assistant Field Manager, Resources
- Josh Hemenway Wildlife Biologist
- Summer Schulz Range Specialist
- Kellie Roadifer Environmental Planning Coordinator
- Martin Hudson Recreation Planner
- Therese Hartman Wyoming Game and Fish Department

REFERENCES

Bureau of Land Management (BLM), Wyoming State Office (WSO), 2006, State Protocol between the Wyoming BLM State Director and the Wyoming State Historic Preservation Office (WySHPO), programmatic agreement between the BLM Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers regarding the manner in which BLM will meet its responsibilities under the National Historic Preservation Act (NHPA), WySHPO, Cheyenne, WY.

BLM, Pinedale Field Office (PFO), letter dated October 18, 2006, from the BLM PFO to the Eastern Shoshone, Northern Arapaho, Shoshone Bannock, and Uinta-Ouray Ute tribes regarding various proposed well pads, including the QEP Stewart Point 7-28 well pad, drafted by David Vlcek and signed by PFO Field Manager, Dennis Stenger.

BLM PFO, letter dated November 8, 2007, from the BLM PFO to the Eastern Shoshone, Northern Arapaho, Shoshone Bannock, and Uinta-Ouray Ute tTribes regarding various proposed well pads, including the revised location of the QEP Stewart Point 7-28 well pad, drafted by David Vlcek and signed by PFO Field Manager, Chuck Otto.

BLM PFO, letter dated September 20, 2007, from the BLM PFO to the Eastern Shoshone, Northern Arapaho, Shoshone Bannock, and Uinta-Ouray Ute tribes regarding Eastern Shoshone consultation conducted at various proposed well pads, including the QEP Stewart Point 7-28 well pad, drafted by David Vlcek and signed by Jack Hanson for PFO Field Manager Chuck Otto.

BLM PFO, letter dated June 3, 2009, from the BLM Pinedale Field Office to the Eastern Shoshone, Northern Arapaho, Shoshone Bannock, and Uinta-Ouray Ute tribes transmitting visual simulations of the QEP Stewart Point 7-28 well pad, drafted by David Vlcek and signed by William Lanning for PFO Field Manager Chuck Otto.

BLM PFO, letter dated June 11, 2009 to WySHPO submitting inventory and evaluation reports, visual simulations, visual contrast ratings, and Native American correspondence concerning the QEP Stewart Point 7-28 well pad, in compliance with Wyoming Protocol and 36.CFR.800, drafted by David Vlcek and signed by John Huston for PFO Field Manager Chuck Otto.

BLM PFO, letter dated April 1, 2010 from the BLM PFO to the Eastern Shoshone, Northern Arapaho, Shoshone Bannock, and Uinta-Ouray Ute tribes formally reinviting the tribes to consult on the proposed Stewart Point 7-28 well pad, drafted by David Vlcek and signed by acting PFO Field Manager Brian Davis.

BLM PFO, letter dated April 8, 2010 from the BLM PFO to the Uinta-Ouray Ute Tribe confirming consultation regarding the proposed Stewart Point 7-28 well pad, scheduled for May 4, 2010, drafted by David Vlcek and signed by acting PFO Field Manager Brian Davis.

BLM PFO, letter dated April 27, 2011 from the BLM PFO to the the Eastern Shoshone, Northern Arapaho, and Uinta-Ouray Ute tribes providng project summary and 48SU2019 site report and requesting additional information, drafted by David Crowley and signed by PFO Field Manager Shane DeForest.

Darlington, David, 2011, Final Testing Report (Site 48SU3193) for the Questar Exploration and Production Company Stewart Point 7-28 Well Pad, submitted to the PFO (Report # PFO-11-048) by Western Archaeological Services, Rock Springs, WY.

Larson, Don R., 2007, Results of Testing and Proposed Mitigation at Site 48SU3193 for the Realigned Stewart Point 7-28 Well Pad and Access Road. Submitted to the PFO (Report # 046-08-262) by Western Archaeological Services, Rock Springs, WY.

Larson, Don R., 2007, Preliminary Results for the Questar Exploration and Production Stewart Point 7-28 Well Pad and Site 48SU3193, submitted to the PFO (Report # 046-08-333) by Western Archaeological Services, Rock Springs, WY.

Larson, Don R., 2007, Class III Cultural Resource Inventory Report for the Questar Exploration and Production Stewart Point 7-28 Well Pad, Access Road and Pipeline, submitted to the PFO (Report # 046-07-233) by Western Archaeological Services, Rock Springs, WY.

Sawyer, Hall, and Nielson, Ryan, January 20, 2011, Mule Deer Migration Routes to and from the Mesa and Ryegrass Winter Ranges: 2010 by Western Ecosystems Technology, Inc.

Sawyer, Hall, Nielson, Ryan, and Strickland, 2008, Long-term Monitoring Plan to Assess Potential Impacts of Energy Development on Mule Deer in the Pinedale, Anticline Project Area by Western Ecosystems Technology, Inc.

BLM High Desert District Office (HDDO), November 2011, Environmental Assessment for November 2011 Competitive Oil and Gas Lease Sale, DOI-BLM-WY-030-2011-123-EA.

Stanberry, Debra K., May 23, 2011, Revised Visual Resource Protection Plan, Stewart Point 7-28 Proposed Well Pad, Stewart Point Wells 6D3-28 and 9B3-28 by URS Corporation for QEP Energy Company.